Contents in Brief

Chapter 1 The Nature of Analytical Chemistry 1

PART I TOOLS OF ANALYTICAL CHEMISTRY 14

Chapter 2 Chemicals, Apparatus, and Unit Operations of Analytical Chemistry 15
Chapter 3 Using Spreadsheets in Analytical Chemistry 48
Chapter 4 Calculations Used in Analytical Chemistry 62
Chapter 5 Errors in Chemical Analyses 82
Chapter 6 Random Errors in Chemical Analysis 93
Chapter 7 Statistical Data Treatment and Evaluation 123
Chapter 8 Sampling, Standardization, and Calibration 153

PART II CHEMICAL EQUILIBRIA 196

Chapter 9 Aqueous Solutions and Chemical Equilibria 197
Chapter 10 Effect of Electrolytes on Chemical Equilibria 235
Chapter 11 Solving Equilibrium Problems for Complex Systems 249

PART III CLASSICAL METHODS OF ANALYSIS 279

Chapter 12 Gravimetric Methods of Analysis 280
Chapter 13 Titrations in Analytical Chemistry 302
Chapter 14 Principles of Neutralization Titrations 322
Chapter 15 Complex Acid/Base Systems 348
Chapter 16 Applications of Neutralization Titrations 381
Chapter 17 Complexation and Precipitation Reactions and Titrations 400

PART IV ELECTROCHEMICAL METHODS 441

Chapter 18 Introduction to Electrochemistry 442
Chapter 19 Applications of Standard Electrode Potentials 473
Chapter 20 Applications of Oxidation/Reduction Titrations 509
Chapter 21 Potentiometry 535
Chapter 22 Bulk Electrolysis: Electrogravimetry and Coulometry 578
Chapter 23 Voltammetry 610

PART V SPECTROCHEMICAL METHODS 649

Chapter 24 Introduction to Spectrochemical Methods 650
Chapter 25 Instruments for Optical Spectrometry 683
Chapter 26 Molecular Absorption Spectrometry 722
Chapter 27 Molecular Fluorescence Spectroscopy 760
Chapter 28 Atomic Spectroscopy 773
Chapter 29 Mass Spectrometry 802

PART VI KINETICS AND SEPARATIONS 818

Chapter 30 Kinetic Methods of Analysis 819
Chapter 31 Introduction to Analytical Separations 847
Chapter 32 Gas Chromatography 887
Chapter 33 High-Performance Liquid Chromatography 912
Chapter 34 Miscellaneous Separation Methods 935

PART VII PRACTICAL ASPECTS OF CHEMICAL ANALYSIS 959

Part VII chapters are only available as an Adobe Acrobat® PDF file on the web at **www.cengage.com/chemistry/skoog/fac9**.

Chapter 35 The Analysis of Real Samples 960
Chapter 36 Preparing Samples for Analysis 970
Chapter 37 Decomposing and Dissolving the Sample 976
Chapter 38 Selected Methods of Analysis 986

Glossary G-1

Appendix 1 The Literature of Analytical Chemistry A-1
Appendix 2 Solubility Product Constants at 25°C A-6
Appendix 3 Acid Dissociation Constants at 25°C A-8
Appendix 4 Formation Constants at 25°C A-10
Appendix 5 Standard and Formal Electrode Potentials A-12
Appendix 6 Use of Exponential Numbers and Logarithms A-15
Appendix 7 Volumetric Calculations Using Normality and Equivalent Weight A-19
Appendix 8 Compounds Recommended for the Preparation of Standard Solutions of Some Common Elements A-27
Appendix 9 Derivation of Error Propagation Equations A-29

Answers to Selected Questions and Problems A-34

Index I-1