
Table of Contents

pg. Analytical Tools

- 9** Accuracy, Precision and Tolerance: Sorting out Glassware
21 Solutions and Dilutions
37 Classical Analytical Methods: A Design Perspective on Volumetric Measurement
57 Sample Preparation
69 Instrumental Calibration
83 Quality Assurance Measures
93 Instrumental Calibration: Method of Standard Additions
119 Interlaboratory Comparisons

Statistics

- 133** Errors in Measurements and Their Effect on Data Sets
143 The Gaussian Distribution
165 Statistical Tests of Data: The t Test
189 Statistical Tests of Data: The F Test
201 Linear Regression for Calibration of Instruments

Equilibrium

- 213** The Importance of Ionic Strength
223 Activity and Activity Coefficients
235 Multiple Equilibria: When Reactions Compete
245 pH of Solutions of Strong Acids and Bases
257 Acid-Base Distribution Plots
275 The Acid-Base Distribution Functions
289 The Buffer Zone: What is a Buffer and in What pH Range is it Effective?
301 When Acids and Bases React: Laboratory

Electrochemistry

- 307** Electrochemistry: The Microscopic View of Electrochemistry
325 Electrochemistry: Calculating Cell Potentials

Spectrometry

- 347** The Beer-Lambert Law
359 Atomic and Molecular Absorption Processes

Chromatography and Separation

- 371** Introduction to Chromatography
381 Band Broadening Effects in Chromatography
391 Gas Chromatography or HPLC, Which Do You Choose?

403 ANA-POGIL Project Activities: Topics and Learning Goals

411 ANA-POGIL Activities & Analytical Texts Mapping