第一图书网, tushu007.com

<<定量化学分析>>

图书基本信息

书名：<<定量化学分析>>

13位ISBN编号：9787301156599

10位ISBN编号：7301156596

出版时间：2009-10

出版时间：北京大学

作者：李娜//李克安

页数：308

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：http://www.tushu007.com

第一图书网, tushu007.com

前言

This text brings together the individuals and the desire to develop a text forundergraduate students who have English as a second language. Our initial focus wasundergraduate students with chemistry major in the College of Chemistry and MolecularEngineering, Peking University, Beijing, China, but now we hope and expect that otherundergraduate students may be able to learn more easily with this text as they cope withthe English language and the essentials of analytical chemistry.Lecture Series Leading to Text:The one semester course in analytical chemistry in English for undergraduatestudents was initiated by Professor Li Ke'an in February 2005 with Dr. Li Na as thepresenter of one 2 hour lecture each week for 15 weeks. The size of the lecture roomlimited the number of students to 50.Each year the students prepare presentations of their science project reports.The audience of their peers grades the oral presentations of those students whovolunteered and were selected to give oral presentations. Competition for beingincluded among the oral presenters has been impressive. Student discussion, gradingof the presenters and the presentations bring forth a profound bonding. Each of us inthe lecture room feels the shoes worn by another.As we introduced different examples and illustrations to the lecture series, thesequickly became ideas for the coming analytical chemistry text. In Chapter 1," theHuman Genome Project was used to show the power and success possible whenanalytical chemists join forces to bring the minds and resources of the academiccommunity to focus on a goal. The project is indeed a road map of problem solvingusing new and different technologies plus automation to resolve analytical roadblocks to meet the time constraints of the Genome Project thus opening researchopportunities for decades. A global environmental need brought together anothergroup of scientists in the concluding Chapter 10 to address the ever present need tomonitor drinking water contamination throughout the world. We selected arsenic asone example of the world-wide need for simple, sensitive, cost effective analyticalmethods to monitor drinking water.

第一图书网, tushu007.com

<<定量化学分析>>

内容概要

北京大学的分析化学课程2003年被评为国家级精品课，是全国分析化学课程中首门国家级精品课程。
编者从2003年以来开始对定量化学分析课进行英文讲授。
本书是其中双语课的教材。
本书可与《分析化学教程》(“十五”规划教材)配合使用。

第一图书网, tushu007.com

作者简介

作者：LiNa (美国)Jpohn J.Hefferren LiKe'an

第一图书网, tushu007.com

<<定量化学分析>>

书籍目录

CHAPTER 1 INTRODUCTION OF ANALYTICAL CHEMISTRY 1.1 What is Analytical Chemistry 1.2 Steps in the Development of an Analytical Method 1.3 Classification of Quantitative Analytical Methods 1.3.1 Chemical Analysis 1.3.2 Instrumental Analysis 1.4 Principles of Volumetric Titration 1.4.1 Basic Terms 1.4.2 Requirements of Titration Reactions 1.4.3 Classification of Titration Processes 1.4.4 Primary Standards and Standard Solutions 1.4.5 Basic Apparatus in Chemical Analyses 1.5 Calculations in Volumetric Titration 1.5.1 Preparation of Standard Solutions 1.5.2 Titration Results CHAPTER 2 DATA ANALYSIS 2.1 Error and Classification 2.1.1 Accuracy and Precision 2.1.2 Errors and Deviation 2.1.3 Systematic and Random Errors 2.2 Distribution of Random Errors 2.2.1 Frequency Distribution 2.2.2 Normal Distribution 2.2.3 Predicting the Probability of Random Errors--Area under Gaussian Curve 2.3 Statistical Data Treatment 2.3.1 Estimation of Population Mean (μ) and Population Standard Deviation (α) 2.3.2 Confidence Interval for Population Mean 2.3.3 Statistical Aids to Hypothesis Testing 2.3.4 Detection of Gross Errors 2.4 Propagation of Error 2.4.1 Systematic Errors 2.4.2 Random Errors (Standard Deviation) 2.4.3 Maximum Errors (ER) 2.4.4 Distribution of Errors 2.5 Significant Figure Convention 2.5.1 Significant Figures 2.5.2 Numerical Rounding in Calculations CHAPTER 3 ACID-BASE EQUILIBRIUM 3.1 Equilibrium Constants and Effect of Electrolytes 3.2 Acid-base Reactions and Equilibria 3.2.1 Acid and Base--Bronsted Concept 3.2.2 Dissociation of Acid or Base and Acid-base Equilibria 3.2.3 Magnitude of Dissociating Species at a Given pH： x-values 3.3 Solving Equilibrium Calculations Using pH Calculations as an Example 3.3.1 General Approaches (Systematic Approaches) 3.3.2 pH Calculations 3.4 Buffer Solutions 3.4.1 pH Calculations of Buffer Solutions 3.4.2 Buffer Capacity 3.4.3 Preparation of Buffers CHAPTER 4 ACID-BASE TITRATION 4.1 Acid/Base Indicators 4.1.1 Principle 4.1.2 Examples 4.1.3 Titration Errors 4. 1.4 Factors Influencing Performance 4.2 Titration Curves and Selection of Indicators 4.2.1 Strong Acids (Bases) 4.2.2 Monoprotic Acids (Bases) 4.2.3 Strong and Weak Acids (Bases) 4.2.4 Polyfunctional Weak Acids (Bases) 4.2.5 Mixture of Weak Acids (Bases) 4.3 Titration Error Calculations 4.3.1 Strong Acids (Bases) 4.3.2 Monoprotic Weak Acids (Bases) 4.3.3 Polyfunctional Acids (Bases) 4.4 Preparation of Standard Solutions 4.4.1 Standard Acid Solutions 4.4.2 Standard Base Solutions 4.4.3 The Carbonate Error 4.5 Examples of Acid-base Titrations 4.5.1 Determination of Total Alkalinity 4.5.2 Determination of Nitrogen 4.5.3 Determination of Boric Acid 4.6 Acid-base Titrations in Non-aqueous Solvents 4.6.1 Non-aqueous Solvents 4.6.2 Examples of Non-aqueous Titrations CHAPTER 5 COMPLEXATION REACTION AND COMPLEXOMETRIC TITRATIONCHAPTER 6 REDOX EQUILIBRIUM AND TITRATION CHAPTER 7 PRECIPITATION EQUILIBRIUM, TITRATION, AND GRAVIMETRY CHAPTER 8 SPECTROPHOTOMETRY CHAPTER 9 INTRODUCTION TO ANALYTICAL SEPARATION CHAPTER 10 SOLVING A REAL ANALYTICAL PROBLEM APPENDICES ANSWERS INDEX PERIODIC TABLE OF THE ELEMENTS

第一图书网, tushu007.com

章节摘录

插图：Gravimetry, based on mass measurement, includes precipitation gravimetry, volatilizationgravimetry, and electrogravimetry. In precipitation gravimetric analysis, the mass ofthe product of the chemical reaction related to the analyte, which is the sparinglysoluble and pure precipitate, is measured with an analytical balance. For example, abarium sulfate gravimetric method for determining sulfur content in iron ores isrecommended by the International Organization for Standardization （ISO 4689.1986,Iron ores——determination of sulfur content——barium sulfate gravimetric method）.After sample preparation, the sulfur in the sample is converted to sulfate, an excessof barium chloride （BaCl） is added to an aqueous solution of the sample to cause theprecipitation of the sulfate as barium sulfate （BaSo）. The precipitate （BaSo） isthen filtered, washed to remove impurities, heated, and weighed to obtain the finalmass of BaSO4. Precipitation gravimetry is usually suitable for samples with an analytegreater than 1%.Volumetric analysis （also volumetric titration） is a quantitative chemical analysisthat is used to determine the unknown concentration of a known reactant. Astandard solution is added from a buret to react with the analyte until the titration iscomplete, i. e. , the endpoint is reached as determined by an indicator. In volumetricanalysis, the volume measured is used to calculate the concentration of the analyte.For example, a hydrochloric acid （HC1） standard solution added from a buret can beused to determine the concentration of sodium hydroxide （NaOH） in a solution usingmethyl orange （MO） as the indicator. After the neutralization reaction reaches apoint when all the NaOH has just reacted with HC1, an additional very small amount（about one half drop） of HC1 changes the final solution from basic to acidic and themethyl orange indicator changes its color from yellow to orange.Volumetric analysis are classified by the type of reactions occurring, e.g., acid-base titration （neutralization titration）, complexometric titration, redox titrationand precipitation titration.

第一图书网, tushu007.com

编辑推荐

《定量化学分析》是由北京大学出版社出版的。

第一图书网, tushu007.com

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:http://www.tushu007.com