

CONTENTS

Chapter 1. Introduction

1.1 Purpose	1-1
1.2 How to Use this Book	1-2
1.3 Basic Chromatographic Theory	1 - 2
1.4 General Experimental Techniques	1 - 9
1.4.1 Sample Preparation	1-9
1.4.2 Mobile Phase Preparation	1-9
1.4.3 Instrument Care and Maintenance	1-10
1.4.4 Column Usage, Storage and Flushing	1-11
1.4.5 The W Detector	1-12
1.4.6 Method Development and Optimization	1 -14
1.5 Qualitative Analysis	1-21
1.6 Quantitative Analysis	1 -22
1.6.1 Calibration methods	1-22
1.6.2 Analysis of totally unknown samples	1-23
1.6.3 Linear Regression	1 -24
1.6.4 Accuracy and precision	1-25

Chapter 2. Reversed Phase Experiments

2.1 Determination of Caffeine in Beverages by the Methods of Internal and External Standards ...	2-1
2.2 A Study of Selectivity and Mobile Phase Composition	27
2.3 Isocratic Mobile Phase Optimization in Reversed Phase Liquid Chromatography	2-12
2.4 Resolution and Peak Purity	222
2.5 Comparison of Gradient Elution and Isocratic Methods	23 1
2.6 Determination of Ethyl Vanillin in Chocolate	239
2.7 Fluorescence Detection of Polycyclic Compounds	2-45
2.8 Monitoring Reaction Rates with an Autosampler	2-49
2.9 Preparation of a van Deemter Plot	2-54
2.10 Packing and Evaluating a Reversed Phase Column	262
2.11 Effects of Sample Size on Chromatographic Behavior	276
2.12 Trace Analysis of Carbamate Pesticides Using Electrochemical Detection	28 1
2.13 Tryptic Mapping of Egg White Lysozyme	289
2.14 Resolution and Quantitation of Amino Acids	293
2.15 The Amino Acid Sequence of Angiotensin	2-99

2.16 Chiral Separation of Amino Acids By Ligand Exchange Chromatography	2-107
2.17 A Study of the Electronic Integration of Chromatographic Peaks	2-112

Chapter 3. Normal Phase Experiments

3.1 Isocratic Mobile Phase Optimization in Normal Phase Liquid Chromatography	3-1
3.2 Analysis of Transition Metal Chelates	3-1-1
3.3 Determination of Sugars in Foods and Beverages on Dynamically Modified Silica with a Refractive Index Detector	3-15

Chapter 4. Size Exclusion Experiments

4.1 Determination of the Molecular Weight of a Protein	4-1
4.2 Effects of Sample Dilution and Eluant on Chromatographic Behavior of Proteins	4-5

Chapter 5. Ion Exchange & Ion Pair Experiments

5.1 Ion Exchange Chromatography of Organic Acids in White Wine	5-1
5.2 Qualitative Analysis for FD&C Dyestuffs in Foods and Cosmetics	5-9
5.3 Indirect Photometric Determination of Anions in Drinking Water	5-17

Chapter 6. Preparative Scale Experiments

6.1 Preparative Scale Separation of Phthalate Esters	6-1
6.2 Purification of b-Tocopherol from a Vitamin E Mixture in Milligram Quantities	6-15

Appendices

Appendix A. Mobile Phase Composition Graphs	A-1
Appendix B. General Information	B-1

INDEX