1. Record Nr. UNINA9910143567103321

Autore	Snyder Lloyd R
Titolo	High-performance gradient elution : the practical application of the linear-solvent-strength model / / Lloyd R. Snyder, John W. Dolan
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley, c2007
ISBN	1-280-72143-X 9786610721436 0-470-05552-9 0-470-05551-0
Descrizione fisica	1 online resource (491 p.)
Altri autori (Persone)	DolanJohn W
Disciplina	543/.84
Soggetti	High performance liquid chromatography
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	HIGH-PERFORMANCE GRADIENT ELUTION; CONTENTS; PREFACE; GLOSSARY OF SYMBOLS AND TERMS; 1 INTRODUCTION; 1.1 The "General Elution Problem" and the Need for Gradient Elution; 1.2 Other Reasons for the Use of Gradient Elution; 1.3 Gradient Shape; 1.4 Similarity of Isocratic and Gradient Elution; 1.4.1 Gradient and Isocratic Elution Compared; 1.4.2 The Linear-Solvent-Strength Model; 1.5 Computer Simulation; 1.6 Sample Classification; 1.6.1 Sample Compounds of Related Structure ("Regular Samples"); 1.6.2 Sample Compounds of Unrelated Structure ("Irregular" Samples); 2 GRADIENT ELUTION FUNDAMENTALS 2.1 Isocratic Separation2.1.1 Retention; 2.1.2 Peak Width and Plate Number; 2.1.3 Resolution; 2.1.4 Role of Separation Conditions; 2.1.4.1 Optimizing Retention [Term a of Equation (2.7)]; 2.1.4.2 Optimizing Selectivity [Term b of Equation (2.7)]; 2.1.4.3 Optimizing the Column Plate Number N [Term c of Equation (2.7)]; 2.2 Gradient Separation; 2.2.1 Retention; 2.2.1.1 Gradient and Isocratic Separation Compared for "Corresponding" Conditions; 2.2.2 Peak Width; 2.2.3 Resolution; 2.2.3.1 Resolution as a Function of Values of S for Two Adjacent Peaks ("Irregular" Samples) 2.2.3.2 Using Gradient Elution to Predict Isocratic Separation2.2.4 Sample Complexity and Peak Capacity; 2.3 Effect of Gradient

Conditions on Separation; 2.3.1 Gradient Steepness b: Change in Gradient Time; 2.3.2 Gradient Steepness b: Change in Column Length or Diameter; 2.3.3 Gradient Steepness b: Change in Flow Rate; 2.3.4 Gradient Range ø: Change in Initial Percentage B (ø(0)); 2.3.5 Gradient Range ø: Change in Final %B (ø(f)); 2.3.6 Effect of a Gradient Delay; 2.3.6.1 Equipment Dwell Volume; 2.3.7 Effect of Gradient Shape (Nonlinear Gradients)
2.3.8 Overview of the Effect of Gradient Conditions on the Chromatogram2.4 Related Topics; 2.4.1 Nonideal Retention in Gradient Elution; 2.4.2 Gradient Elution Misconceptions; 3 METHOD DEVELOPMENT; 3.1 A Systematic Approach to Method Development; 3.1.1 Separation Goals (Step 1 of Fig. 3.1); 3.1.2 Nature of the Sample (Step 2 of Fig. 3.1); 3.1.3 Initial Experimental Conditions; 3.1.4 Repeatable Results; 3.1.5 Computer Simulation: Yes or No?; 3.1.6 Sample Preparation (Pretreatment); 3.2 Initial Experiments; 3.2.1 Interpreting the Initial Chromatogram (Step 3 of Fig. 3.1)
3.2.1.1 "Trimming" a Gradient Chromatogram3.2.1.2 Possible Problems; 3.3 Developing a Gradient Separation: Resolution versus Conditions; 3.3.1 Optimizing Gradient Retention k* (Step 4 of Fig. 3.1); 3.3.2 Optimizing Gradient Selectivity * (Step 5 of Fig. 3.1); 3.3.3 Optimizing the Gradient Range (Step 6 of Fig. 3.1); 3.3.3.1 Changes in Selectivity as a Result of Change in k*; 3.3.4 Segmented (Nonlinear) Gradients (Step 6 of Fig. 3.1 Continued); 3.3.5 Optimizing the Column Plate Number N* (Step 7 of Fig. 3.1); 3.3.6 Column Equilibration Between Successive Sample Injections
3.3.7 Fast Separations

Sommario/riassunto

Gradient elution demystifiedOf the various ways in which chromatography is applied today, few have been as misunderstood as the technique of gradient elution, which presents many challenges compared to isocratic separation. When properly explained, however, gradient elution can be less difficult to understand and much easier to use than often assumed.Written by two well-known authorities in liquid chromatography, High-Performance Gradient Elution: The Practical Application of the Linear-Solvent-Strength Model takes the mystery out of the practice of gradient elution and helps r