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Autore	Blumberg Leonid M
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Nota di contenuto	Temperature-Programmed Gas Chromatography; Contents; Preface; Constants, Abbreviations, Symbols; Part One Introduction; 1 Basic Concepts and Terms; References; 2 A Column; 2.1 Retention Mechanisms; 2.2 Structures; 2.3 Operational Modes; 2.4 Specific and General Properties of a Column; 2.5 Boundaries; References; Part Two Background; 3 Linear Systems; 3.1 Problem Review: Metrics for Peak Retention Time and Width; 3.2 Chromatograph as an Information Processing System; 3.3 Properties of Linear Systems; 3.4 Mathematical Moments of Functions; 3.4.1 The First and Higher Moments of a Pulse 3.5 Properties of Mathematical Moments3.5.1 Standard Deviation of Convolution of Two Pulses; 3.6 Pulses; References; 4 Migration of a Solid Object; 4.1 Velocity of an Object; 4.2 Parameters of Migration Path; 4.3 Relations between Path Parameters and Object Parameters; References; 5 Solute-Liquid Interaction in Gas Chromatography; 5.1 Distribution Constant and Retention Factor; 5.2 Chromatographic Parameters of Solute-Liquid Interaction; 5.3 Alternative Expressions of Ideal Retention Model; 5.4 Linearized Retention Model; 5.5 Relations Between Characteristic Parameters

5.5.1 Fixed Dimensionless Film Thickness5.5.2 Arbitrary Film Thickness; 5.5.3 Generic Solutes; 5.5.4 Characteristic Temperatures of n-Alkanes; References; 6 Molecular Properties of Ideal Gas; 6.1 Theory; 6.2 Gas Viscosity and Related Parameters - Empirical Formulae; 6.3 Empirical Formulae for Solute Diffusivity in a Gas; 6.3.1 Simplified Formulae; 6.3.2 Diffusivity of n-Alkanes; References; 7 Flow of Ideal Gas; 7.1 Flow of Gas in a Tube; 7.1.1 One-Dimensional Model of a Tube; 7.1.2 Gas Velocity; 7.1.3 Flow Rate; 7.1.4 Mass-Conserving Flow; 7.2 Pneumatic Parameters; 7.2.1 Energy Flux
7.2.2 Specific Flow Rate7.2.3 Spatial Profiles of Pressure and Velocity; 7.2.4 Critical Length of a Tube; 7.2.5 Vacuum-Extended Length and Related Parameters; 7.2.6 Hold-up Time; 7.2.7 Temporal Profiles; 7.2.8 Averages; 7.2.9 Virtual Pressure; 7.3 Relations Between Pneumatic Parameters; 7.3.1 General Formulae for the Core Group; 7.3.2 General Formulae for Other Parameters; 7.3.3 Special Case: Weak Decompression; 7.3.4 Special Case: Strong Decompression; References; Part Three Formation of Chromatogram; 8 Formation of Retention Times; 8.1 Solute Mobility
8.2 Solute-Column Interaction and Solute Migration8.2.1 Parameters of a Solute-Column Interaction; 8.2.2 Solute Mobility; 8.2.3 Generic Solutes; 8.2.4 Velocity of a Solute Zone; 8.3 General Equations of a Solute Migration and Elution; 8.3.1 Dynamic Gas Propagation Time; 8.3.2 Solute Retention Time and Dynamic Hold-up Time; 8.4 Uniform Solute Mobility in Isobaric Analysis; 8.4.1 Uniform Mobility; 8.4.2 Isobaric (Constant Pressure) GC Analysis; 8.4.3 Two Factors Affecting Retention Time; 8.4.4 Approximate Forms of Migration and Elution Equations
8.5 Scalability of Retention Times in Isobaric Analyses

Sommario/riassunto

This book provides a comprehensive up-to-date overview of temperature-programmed gas chromatography (GC). The first part of the book introduces the reader to the basics concepts of GC, as well as the key properties of GC columns. The second part describes the mathematical and physical background of GC. In the third part, different aspects in the formation of a chromatogram are discussed, including retention times, peak spacing and peak widths. An invaluable reference for any chromatographer and analytical chemist, it provides all the answers to questions like:* At what temperat