

1. Record Nr.	UNINA9911018951903321
Autore	Rood Dean
Titolo	The troubleshooting and maintenance guide for gas chromatographers // Dean Rood
Pubbl/distr/stampa	Weinheim, : Wiley-VCH [Chichester, : John Wiley, distributor], c2007
ISBN	9786611087906 9781281087904 1281087904 9783527611300 3527611304 9783527611317 3527611312
Edizione	[4th, rev. and updated ed.]
Descrizione fisica	1 online resource (347 p.)
Altri autori (Persone)	RoodDean
Disciplina	543.0896 543.85
Soggetti	Gas chromatography Gas chromatography - Instruments - Maintenance and repair
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previous ed. published: Weinheim ; New York : Wiley-VCH, c1999, under title: A practical guide to the care, maintenance, and troubleshooting of capillary gas chromatographic systems.
Nota di bibliografia	Includes bibliographical references (p. 317) and index.
Nota di contenuto	The Troubleshooting and Maintenance Guide for Gas Chromatographers; Preface; Contents; Intentions and Introduction; 1 Introduction to Capillary Gas Chromatography; 1.1 What Is Gas Chromatography?; 1.2 What Types of Compounds Are Suitable for GC Analysis?; 1.3 The Basic Parts of a Gas Chromatograph; 1.3.1 Gas Supply and Flow Controllers; 1.3.2 Injector; 1.3.3 Capillary Column and Oven; 1.3.4 Detector; 1.3.5 Data System; 1.4 The Chromatogram; 1.5 The Mechanism of Compound Separation; 1.5.1 A Simple Description of the Chromatographic Process 1.5.2 A Detailed Description of the Chromatographic Process 1.6 Factors Affecting Separation; 1.6.1 Stationary Phase; 1.6.2 Compound Structure; 1.6.3 Column Temperature; 2 Basic Definitions and

Equations; 2.1 Why Bother?; 2.2 Peak Shapes; 2.2.1 Peak Width (W); 2.2.2 Peak Symmetry; 2.3 Retention; 2.3.1 Retention Time (t_r); 2.3.2 Adjusted Retention Time (t_r'); 2.3.3 Retention Factor (k); 2.3.4 Retention Index (I); 2.4 Phase Ratio (β); 2.5 Distribution Constant (K(C)); 2.5.1 K(C) and Column Dimensions; 2.5.2 K(C) and Column Temperature; 2.6 Column Efficiency 2.6.1 Number of Theoretical Plates (N) 2.6.2 Height Equivalent to a Theoretical Plate (H); 2.6.3 Effective Theoretical Plates (N_{eff}) and Effective Plate Heights (H_{eff}); 2.6.4 Precautions When Using Theoretical Plates; 2.7 Utilization of Theoretical Efficiency (UTE%); 2.8 Separation Factor (α); 2.9 Resolution (R); 2.10 Trennzahl (TZ); 2.11 Column Capacity; 3 Capillary GC Columns: Tubing; 3.1 Fused Silica Capillary Columns; 3.2 Fused Silica Tubing; 3.3 Outer Coating; 3.4 Other Tubing Materials; 3.5 Polyimide Fused Silica Tubing Bending Stress; 4 Capillary GC Columns: Stationary Phases 4.1 Stationary Phases 4.2 Types of Stationary Phases; 4.2.1 Polysiloxanes or Silicones; 4.2.2 Arylene-Modified Polysiloxanes; 4.2.3 Polyethylene Glycols; 4.2.4 Porous Layer Stationary Phases; 4.3 Characteristics of Stationary Phases; 4.3.1 Bonded and Cross-linked Stationary Phases; 4.3.2 Stationary Phase Polarity; 4.3.3 Stationary Phase Selectivity; 4.4 Stationary Phase Interactions; 4.4.1 Dispersion Interaction; 4.4.2 Dipole Interaction; 4.4.3 Hydrogen Bonding Interaction; 4.4.4 When There are Multiple Interactions; 4.5 Stationary Phase Equivalencies; 4.6 Column Temperature Limits 4.7 Column Bleed 4.7.1 What is Column Bleed?; 4.7.2 Measuring Column Bleed; 4.7.3 Sensitivity Considerations; 4.7.4 Detector Considerations; 4.7.5 Minimizing Column Bleed; 4.8 Selecting Stationary Phases; 5 Capillary GC Columns: Dimensions; 5.1 Introduction; 5.2 Column Length; 5.2.1 Column Length and Efficiency/Resolution; 5.2.2 Column Length and Retention; 5.2.3 Column Length and Pressure; 5.2.4 Column Length and Bleed; 5.2.5 Column Length and Cost; 5.2.6 Selecting Column Length; 5.3 Column Diameter; 5.3.1 Column Diameter and Efficiency/Resolution; 5.3.2 Column Diameter and Retention 5.3.3 Column Diameter and Pressure

Sommario/riassunto

This fourth edition of the classic guide for every user of gas chromatographic instrumentation is now updated to include such new topics as fast GC using narrow, short columns, electronic pressure control, and basic aspects of quantitative gas chromatography. The author shares his many years of experience in technical support for gas chromatography users, addressing the most common problems, questions and misconceptions in capillary gas chromatography. He structures and presents the material in a concise and practical manner, suitable even for the most inexperienced user without any detail