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Titolo	Static headspace-gas chromatography [[electronic resource]] : theory and practice / / Bruno Kolb and Leslie S. Ettre
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Nota di contenuto	Static Headspace-Gas Chromatography; Contents; Preface; Preface to the First Edition; List of Acronyms and Symbols; 1 General Introduction; 1.1 Principles of Headspace Analysis; 1.2 Types of Headspace Analysis; 1.2.1 Principles of Static HS-GC; 1.2.2 Principles of Dynamic HS-GC; 1.2.2.1 The Trap; 1.2.2.2 The Water Problem; 1.2.2.3 The Flow Problem; 1.2.2.4 The Time Problem; 1.2.2.5 Comparison of Static HS-GC with P&T; 1.3 The Evolution of the HS-GC Methods; 1.4 HS-GS Literature; 1.5 Regulatory Methods Utilizing (Static) HS-GC; References; 2 Theoretical Background of HS-GC and Its Applications 2.1 Basic Theory of Headspace Analysis2.2 Basic Physicochemical Relationships; 2.3 Headspace Sensitivity; 2.3.1 Influence of Temperature on Vapor Pressure and Partition Coefficient; 2.3.1.1 Enhancement of Lower Boiling Compounds; 2.3.2 Influence of Temperature on Headspace Sensitivity for Compounds with Differing Partition Coefficients; 2.3.3 Influence of Sample Volume on Headspace Sensitivity for Compounds with Differing Partition Coefficients; 2.3.3.1 Sample-to-Sample Reproducibility; 2.3.4 Changing the Sample Matrix by Varying the Activity Coefficient; 2.4 Headspace Linearity

2.5 Duplicate Analyses2.6 Multiple Headspace Extraction (MHE); 2.6.1 Principles of MHE; 2.6.2 Theoretical Background of MHE; 2.6.3 Simplified MHE Calculation; References; 3 The Technique of HS-GC; 3.1 Sample Vials; 3.1.1 Vial Types; 3.1.2 Selection of the Vial Volume; 3.1.3 Vial Cleaning; 3.1.4 Wall Adsorption Effects; 3.2 Caps; 3.2.1 Pressure on Caps; 3.2.2 Safety Closures; 3.3 Septa; 3.3.1 Septa Types; 3.3.2 Septum Blank; 3.3.3 Should a Septum Be Pierced Twice?; 3.3.3.1 Closed-Vial versus Open-Vial Sample Introduction Technique; 3.4 Thermostatting; 3.4.1 Influence of Temperature
3.4.2 Working Modes3.5 The Fundamental Principles of Headspace Sampling Systems; 3.5.1 Systems Using Gas Syringes; 3.5.2 Solid Phase Microextraction (SPME); 3.5.2.1 Comparison of the Sensitivities in HS-SPME and Direct Static HS-GC; 3.5.3 Balanced Pressure Sampling Systems; 3.5.4 Pressure/Loop Systems; 3.5.5 Conditions for Pressurization Systems; 3.5.6 Volume of the Headspace Gas Sample; 3.5.6.1 Sample Volume with Gas Syringes; 3.5.6.2 Sample Volume with Loop Systems; 3.5.6.3 Sample Volume with the Balanced Pressure System; 3.6 Use of Open-Tubular (Capillary) Columns
3.6.1 Properties of Open-Tubular Columns for Gas Samples3.6.2 Headspace Sampling with Split or Splitless Introduction; 3.6.3 Comparison of Split and Splitless Headspace Sampling; 3.6.4 Band Broadening During Sample Introduction; 3.6.5 Influence of Temperature on Band Broadening; 3.6.5.1 Conclusions; 3.6.6 The Combination of Different Columns and Detectors; 3.7 Enrichment Techniques in HS-GC; 3.7.1 Systems for Cryogenic Trapping; 3.7.1.1 Trapping by Cryogenic Condensation; 3.7.1.2 Trapping by Cryogenic Focusing; 3.7.1.3 Influence of Temperature on Cryogenic Focusing
3.7.1.4 Comparison of the Various Techniques of Cryogenic Trapping

Sommario/riassunto

The only reference to provide both current and thorough coverage of this important analytical techniqueStatic headspace-gas chromatography (HS-GC) is an indispensable technique for analyzing volatile organic compounds, enabling the analyst to assay a variety of sample matrices while avoiding the costly and time-consuming preparation involved with traditional GC.Static Headspace-Gas Chromatography: Theory and Practice has long been the only reference to provide in-depth coverage of this method of analysis. The Second Edition has been thoroughly updated to reflect the most recent

2. Record Nr. UNINA9910903788103321

Autore	Bhushan Bharat
Titolo	Introduction to Biomimetics and Bioinspiration : Materials and Surfaces for Green Science and Technology / / by Bharat Bhushan
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ISBN	3-031-62344-4
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Descrizione fisica	1 online resource (789 pages)
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Soggetti	Biomaterials Nanotechnology Surfaces (Technology) Surfaces (Physics) Nanoparticles Sustainability Nanoengineering Surface patterning Surface and Interface and Thin Film
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Nota di contenuto	Introduction -- Roughness-Induced Superliquiphilic/phobic Surfaces: Wetting States and Lessons from Nature -- Modeling of Contact Angle for a Liquid in Contact with a Rough Surface for Various Wetting Regimes -- Plant Leaf Surfaces in Living Nature -- Nanofabrication Techniques used for Superhydrophobic Surfaces -- Strategies for Micropatterned, Nanopatterned, and Hierarchically Structured Lotus-like Surfaces -- Fabrication and Characterization of Mechanically Durable Superhydrophobic Surfaces -- Strategies for Superliquiphobic/philic Surfaces -- Adaptable Fabrication Techniques for Mechanically Durable Superliquiphobic/philic Surfaces -- Fabrication and Characterization of Mechanically Durable Superliquiphobic Surfaces -- Shark-Skin Surface for Fluid-Drag Reduction in Turbulent Flow -- Gecko Adhesion -- Bio- and Inorganic Fouling -- Bioinspired Strategies for Water Collection and Water Purification -- Mosquitoes' Locomotion and Painless Piercing.

Sommario/riassunto

This textbook provides a comprehensive overview of biomimetics and biologically inspired materials, capturing the essence of innovation that draws inspiration from nature. Featuring diverse examples of biomimetics, the book explores surfaces exhibiting characteristics such as roughness-induced super-phobicity/philicity, self-cleaning mechanisms, antifouling properties, low drag, reversible adhesion, high hardness, and mechanical toughness. It also covers phenomena like water harvesting, purification, insect locomotion, and piercing. The book emphasizes durable materials and surfaces with a strong focus on the Lotus Effect, superoleophobic/philic surfaces, anti-biofouling, water purification, oil-water separation, shark skin-inspired low-drag surfaces, gecko-inspired reversible adhesion, nanofabrication, water-harvesting, and mosquito-inspired painless piercing. This is the first textbook on biomimetics and bioinspired surfaces. It is tailored for undergraduate or graduate students of materials science, chemistry, physics, and biology, and serves as an excellent resource for a one-semester course in biomimetics/bioinspiration while also functioning as a valuable textbook for applied nanotechnology courses. Accessible to both novices and experts alike, as well as practitioners, solution seekers, and the intellectually curious, this book is poised to contribute to the advancement of biomimetics, fostering a deeper understanding of nature's design brilliance and its transformative potential in materials science.