

Chromatography Of Aroma Compounds And Fragrances

This book presents the modern applications of hyphenated techniques in the analysis and study of the chemistry of grape, wine, and grape-derivative products. It explains the different applications and techniques used in the laboratory, such as liquid- and gas-phase chromatography, mass spectrometry, and capillary electrophoresis, and describes the methods developed using instrumentation with high performance and reliability. Additionally, the book covers the principal applications of modern sample preparation methods, such as solid-phase-extraction and solid-phase-microextraction.

This book offers comprehensive information on the developments and applications of the solid phase microextraction (SPME) technique. The first part of the book briefly introduces readers to the fundamentals of SPME, while subsequent sections describe the applications of SPME technique in detail, including environmental analysis (air, water, soil/sediments), food analysis (volatile/nonvolatile compounds), and bioanalysis (plants, animal tissues, body fluids). The advantages and future challenges of the SPME technique are also discussed. Including recent research advances and further developments of SPME, the book offers a practical reference guide and a valuable resource for researchers and users of SPME techniques. The target audience includes analytical chemists, environmental scientists, biological scientists, material scientists, and analysts, as well as students at universities/institutes in related fields. Dr. Gangfeng Ouyang is a Professor at the School of Chemistry and Chemical Engineering, Sun Yat-sen University, China. Dr. Ruifen Jiang is an Associate Professor at the School of Environment, Jinan University, China.

Download Ebook Chromatography Of Aroma Compounds And Fragrances

Modern flavours and fragrances are complex formulated products, containing blends of aroma compounds with auxiliary materials, enabling desirable flavours or fragrances to be added to a huge range of products. From the identification and synthesis of materials such as cinnamaldehyde and vanillin in the 19th Century to the current application of advanced analytical techniques for identification of trace aroma compounds present in natural materials, the flavour and fragrance industry has developed as a key part of the worldwide specialty chemicals industry. With contributions mainly coming from industry based experts, Chemistry & Technology of Flavours and Fragrances provides a detailed overview of the synthesis, chemistry and application technology of the major classes aroma compounds. With separate chapters covering important technical aspects such as the stability of aroma compounds, structure - odour relationships and identification of aroma compounds, this book will be essential reading for both experienced and graduate level entrants to the flavour & fragrance industry. It will also serve as an important introduction to the subject for chemists and technologists in those industries that use flavours and fragrances, eg food, cosmetics & toiletries, and household products. David Rowe is Technical Manager at De Monchy Aromatics Ltd., Poole UK

The quantity and composition of aroma and flavour compounds in foods and food products exert a marked influence on the consumer acceptance and, consequently, on the commercial value of the products. It has been established many times that one of the main properties employed for the evaluation of the product quality is the flavour, that is, an adequate flavour composition considerably enhances the marketability. Traditional analytical methods are generally unsuitable for the accurate determination of the quantity of this class of compounds. Moreover,

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they do not contain any useful information on the concentration of the individual substances and they are not suitable for their identification. As the stability of the aroma compounds and fragrances against hydrolysis, oxidation and other environmental and technological conditions shows marked differences, the exact determination of the flavour composition of a food or food product may help for the prediction of the shelf-life of products and the assessment of the influence of technological steps on the aroma compounds resulting in more consumer-friendly processing methods. Furthermore, the qualitative determination and identification of these substances may contribute to the establishment of the provenance of the product facilitating the authenticity test. Because of the considerable commercial importance of flavour composition, much effort has been devoted to the development of methods suitable for the separation and quantitative determination of flavour compounds and fragrances in foods and in other industrial products.

Chemistry and Technology of Flavors and Fragrances

Analysis of Taste and Aroma

Frontiers of Flavour Science

Chapter 117. Volatile Flavor Compounds and Sensory Evaluation of Commercially Available

Apple Juices and Freshly Squeezed, Non-Blended Apple Juices

Thirty Years of Progress

The aim of this book is to describe the fundamental aspects and details of certain gas chromatography applications in Plant Science, Wine technology, Toxicology and the other specific disciplines that are currently being researched. The very

best gas chromatography experts have been chosen as authors in each area. The individual chapter has been written to be self-contained so that readers may peruse particular topics but can pursue the other chapters in the each section to gain more insight about different gas chromatography applications in the same research field. This book will surely be useful to gas chromatography users who are desirous of perfecting themselves in one of the important branch of analytical chemistry.

Written from a practical, problem-solving perspective, this reference explores advances in mass spectrometry, sample preparation, gas chromatography (GC)-olfactometry, and electronic-nose technology for food, cosmetic, and pharmaceutical applications. The book discusses the chemical structures of key flavor and fragrance compounds and contains nume

Quantification of aroma compounds in a solid food product such as bread can be difficult and time-consuming. Multiple headspace extraction (MHE) was performed on wheat bread crumb by dynamic headspace sampling followed by gas chromatography mass spectrometry analysis. MHE was found to be a successful, relatively simple and reproducible method for the quantification of aroma compounds in bread, since the addition of standards directly into the solid bread sample is not necessary. Furthermore, two different purge conditions

within dynamic headspace sampling were successfully used for the quantification of volatiles with low and high breakthrough volumes.

The food analyst plays an important role in modern society. Stricter control over additives in food and concern about the effects of contamination of food by industrial and agricultural chemicals are among the developments which are leading to an increasing emphasis on detailed and accurate analysis of food. However, analysis of food is required for many reasons, including detection of toxic components, monitoring legislation, detecting adulteration, formulation of controlled diets, controlling formulation during product development and detecting changes in food during storage and processing. Foods comprise a complex mixture of components and food analysis requires efficient methods of separation with high sensitivity or specificity of detection. Although many food components are involatile or thermally labile and therefore not suitable for analysis by gas chromatography, other components are volatile and this technique is the preferred analytical method. Developments in methods of derivatization, injector design and column technology have also extended the applicability of gas chromatography to the analysis of relatively involatile compounds.

Handbook of Flavor Characterization

Flavour Science

Handbook of Fruit and Vegetable Flavors

Source book of flavors

Advances of the New Millennium

Molecular Methods of Plant Analysis Concept of the Series The powerful recombinant DNA technology and related developments have had an enormous impact on molecular biology. Any treatment of plant analysis must make use of these new methods.

Developments have been so fast and the methods so powerful that the editors of Molecular Methods of Plant Analysis have now decided to rename the series Molecular Methods of Plant Analysis. This will not change the general aims of the series, but best describe thrust and content of the series as we go forward into the new millennium. This does mean that all chapters a priori deal only with the methods of molecular biology, but rather that these methods are to be found in many chapters together with the more traditional methods of analysis which have seen recent advances. The numbering of the volumes in the series therefore continues on from 20, which is the most recently published volume under the title Modern Methods of Plant Analysis. As indicated for previous volumes, the methods to be found in Molecular Methods of Plant Analysis are described critically, with hints as to their limitations, references to original papers and authors being given, and chapters written so that there is little need to consult other texts to carry out the methods of analysis described. All authors have been chosen because of their special experience in handling plant material and/or their expertise with the methods described.

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the book. Features Covers aromatic evolution of food as it is affected by treatment on food processing, cooking, and aging Describes both classic and new analytical techniques Explains how the flavor perception results are influenced by other food constituents The book comprises a good mix of referenced research with practical applications, also reporting case studies of these various applications of novel technology This text represents a comprehensive reference book for students, educators, researchers, food processors, and food industry personnel providing an up-to-date insight. The range of techniques and materials covered provides engineers and scientists working in the food industry with a valuable resource for their work. Also available in the Food Analysis & Properties Series: Ambient Mass Spectroscopy Techniques in Food and the Environment, edited by Leo M.L. Nollet and Basil K. Munjanja (ISBN: 9781138505568) Hyperspectral Imaging Analysis and Applications for Food Quality, edited by N.C. Basantia, Leo M.L. Nollet, and Mohammed Kamruzzaman (ISBN: 9781138630796) Fingerprinting Techniques in Food Authentication and Traceability, edited by Khwaja Salahuddin Siddiqi and Leo M.L. Nollet (ISBN: 9781138197671) For a complete list of books in this series, please visit our website at: www.crcpress.com/Food-Analysis--Properties/book-series/CRCFOODANPRO

Springer Handbook of Odor

Solid Phase Microextraction

Chapter 71. Multiple Headspace Extraction – an Effective Method to Quantify Aroma

Compounds in Bread Crumb

Food Flavors and Encapsulation, Health Benefits, Analytical Methods, and Molecular Biology of Functional Foods

Modern Practice of Gas Chromatography

Scientists in the pharmaceutical, food, and aroma industries can benefit from reliable thermochemical data. Vaporization enthalpy and vapor pressure data are not available for all compounds. Furthermore, some literature data is conflicting. The goal of this work was to use a method called correlation gas chromatography (CGC) to generate reliable vaporization enthalpy data in instances where other experimental methods are not applicable. Vapor pressures of the targets were also calculated in cases where the required literature data on the standards used in this technique were available. CGC involves making a standard cocktail that includes a mixture of standards and one or more unknowns. Reliable literature values for vaporization enthalpy must be available for the standards in order to evaluate the vaporization enthalpy of the targets. From the retention time of both the standards and their vapor pressures, it was possible to evaluate the vapor pressures of the targets.

The compounds examined were structurally diverse. There included saturated and unsaturated compounds, cyclic and acyclic, aliphatic and aromatic, lactones, aldehydes, carboxylic acid derivatives, profens, and alcohols. Despite structural differences, their properties can be separated into two broad categories: aroma compounds and pharmacologically active compounds. Each class of compounds brought about unique challenges. Some were oils that were extracted and characterized prior to measurement. Aldehydes proved to be unstable. Some carboxylic acids gave poor peak shapes requiring a search for a suitable column. Additionally, some of the profens displayed liquid crystal behavior- adding additional complications. Vaporization enthalpies were measured for nepetalactone, whiskey lactone, menthalactone, trans-2-hexenal, 2,6-dimethyl-5-heptenal, 2,6-nonadienal, trans-2-nonenal, trans,trans-2,4-decadienal, 2-butyl-2-octenal, patchouli alcohol, and Fenoprofen. Vapor pressures were measured for nepetalactone, whiskey lactone, menthalactone, and Fenoprofen. Vaporization enthalpy and vapor pressure values for the standards were all within experimental error of literature

values, except in the case of 2-tetradecanol.

The correlation between the composition of the volatile flavor compounds of apple juices and their sensory evaluation was investigated. Commercially available juices, as well as freshly squeezed, non-blended, cloudy juices of different apple varieties were used for the studies. The headspace aroma profiles (esters, aldehydes, and alcohols) were established using an individually designed technique of purge and trap coupled with thermal desorption and gas chromatography. Calculations of the Aroma Index and the total ester content of the juices were also carried out, resulting in a negative rating for a majority of freshly squeezed juices. In this context, questions about the standardization of aroma values in juices, often presumed a necessity, will be discussed with respect to consumer needs and natural diversity.

Gas chromatography is widely used in applications involving food analysis. Typical applications pertain to the quantitative and/or qualitative analysis of food composition, natural products, food additives, and flavour and aroma components. Providing an up-to-date look at the significant advances in the

technology, this book includes details on novel sample preparation processes; conventional, high-speed multidimensional gas chromatography systems, including preparative instrumentation; gas chromatography-olfactometry principles; and, finally, chemometrics principles and applications in food analysis. Aimed at providing the food researcher or analyst with detailed analytical information related to advanced gas chromatography technologies, this book is suitable for professionals and postgraduate students learning about the technique in the food industry and research.

This book is the Proceedings of the 12th International Flavor Conference, 4th George Charalambous Memorial Symposium, held May 25-29, 2009 in Skiathos, Greece. The International Flavor Conferences are sponsored by the Agricultural Food Chemistry Division of the American Chemical Society and are attended by leaders in the in the field of flavor and food chemistry. The International Flavor Conferences have been held as a global forum for leaders in the field of flavor and food chemistry to present their results covering recent research activities. As in previous years the conference stresses flavors as its main theme

but also includes important topics in food chemistry (analytical methods, packaging storage) and production (safety, patents). Information gathered by researchers in food chemistry have found numerous practical applications for improving foods, and symposia such as this have a goal of transferring basic knowledge to finished products. Recent Advances in Food and Flavor Chemistry: Food Flavors and Encapsulation, Health Benefits, Analytical Methods, and Molecular Biology of Functional Foods will be a useful reference for researchers and other professionals in the industry and academia, particularly those involved directly in food science. This book covers several topical areas and includes: -A historical look at the use of isotopic analyses for flavour authentication -Computer-aided organic synthesis as a tool for generation of potentially new flavouring compounds from ascorbic acid -Butter flavors and microwave popcorn: A review of health issues and industry actions -The aroma of guavas - Key aroma compounds and influence of tissue disruption -Flavour release in lipid rich food matrices; in vitro and in vivo measurement using proton transfer reaction mass spectrometry -A study of the fate of aspartame and

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flavour molecules in chewing gum utilizing LC/MS/MS and GC/MS
-Study on the interaction of selected phenolic acids with bovine serum albumin.

Chemistry, Bioprocessing and Sustainability

Chromatography in Food Science and Technology

Application of Gas Chromatography-mass Spectrometry in the Study of Volatile and Aroma Compounds in Leaves and Grains of Khao Dawk Mali 105 Rice

Thermal Generation of Aromas

Chromatography of Aroma Compounds and Fragrances

Here are the latest applications and developments in the field for food and flavor chemists, food scientists, and aroma researchers in academia and industry. Topics in this volume include: application of GC-O to flavor creation, improving the reproducibility and qualitative accuracy of GC-O, coupling of GC-O with SPME, application of aroma extract dilution analysis to solve off-flavor problems, a new approach called aroma extract concentration analysis, and techniques for improving odor intensity estimates by cross

modality matching.

This multidisciplinary resource details the challenges and analytical methodologies utilized to determine the effect of chemical composition, genetics, and human physiology on aroma and flavor perception. Identifying emerging analytical methods and future research paths, the Handbook of Flavor Characterization studies the interpretation and Maillard, microwave, and extrusion cookin. Regulatory status of maillard reaction flavors. Process flavors and precursor systems. Basic principles for protecting new developments. Analytical methodology. Detction of amadori compounds in heated foods. Maillard reaction products from microwave heating of model systems. Gas chromatography-olfactometry of glucose-proline maillard reaction products. Molasses flavor investigations with sulfur chemiluminescence detection. Isolation of aroma volatiles from an extruded oat ready-toeat cereal. Flavor compounds formed during the maillard reaction. Dicarbonyl sugar derivatives and their role. Mechanism of pyraine formation. Reactivity of peptides in

the maillard reaction. aroma volatiles from meatlike maillard systems. New aroma compounds in wheat bread. Formation pathways primary roasted coffee aroma compounds. indicator compounds and precursors for cocoa aroma formation. Effect of pH on the volatile compounds formed in a Xylose-lysine model system. Flavors from the reaction of lysine and cysteine with glucose in the presence of lipids. Formation of maillard products in the proline-glucose model system. Pyridoimidazoles, histidine-specific reaction products. Role of cysteine in the formation of 2-methyl-3-furanthiol in a thiamine-cysteine model system. Flavoring in extrusion. Lipid oxidation in extruded products. Maillard reaction volatile compounds and color quality of a whey protein concentrate-corn meal extruded product. Ammonium bicarbonate and pyruvaldehyde as flavor precursors in extruded food systems. Collection and characterization of volatile compounds released at the die during twin screw extrusion of corn flour. Formation and degradation of tryptophan amadori products during extrusion

processing. Flavor properties of extrusion cooked mechanically deboned pork.

Flavor is unquestionably one of the most extremely secretive one-reluctant to disclose anything that might be of value to a important attributes of the food we eat. competitor. Thus, little information about Man does not eat simply to live but even the activities of the flavor industry itself is more so lives to eat. Take away the pleasure of food and life becomes relatively mundane. available to the public. There now is a substantial body of literature The goal of the original Source Book of nature dealing with food flavor. The "golden Flavors, written by Henry Heath, was to years" of flavor research in the United States bring together in one volume as much of the were the 1960s and 70s. Numerous academic worldwide data and facts and as many flavor and government institutions had strong related subjects (e. g. , food colors) as was flavor programs and money was readily possible. Henry Heath added a wealth of available for flavor research. In the 1980s personal information on how the

industry and 90s, research funding has become difficult. It accomplishes its various activities, which culminated to obtain, particularly in an esthetic had never been published in any other liter area such as food flavor. The number of authors. It has been the intent of this author to research groups focusing on food flavor has update and build upon the original work of declined in the United States. Fortunately, Henry Heath.

GC-analysis of volatile aroma compounds in French Colombar Brandy using continuous liquid-liquid extraction and solid-phase microextraction

Sensory Analysis, Chemistry, and Physiology

Food Flavors and Chemistry

Interactions between volatile flavor compounds and food matrix components studied using nuclear magnetic resonance spectroscopic and solid phase microextraction techniques

Maillard, Microwave, and Extrusion Processes

Modern flavours and fragrances are complex formulated products containing blends of aroma compounds with auxiliary materials,

enabling desirable flavours or fragrances to be added to a huge range of products. The flavour and fragrance industry is a key part of the worldwide specialty chemicals industry, yet most technical recruits have minimal exposure to flavours and fragrances before recruitment. The analytical chemistry of flavour and fragrance materials presents specific challenges to the analytical chemist, as most of the chemicals involved are highly volatile, present in very small amounts and in complex mixtures. Analytical Methods for Flavor and Fragrance Materials covers the most important methods in the analysis of flavour and fragrance materials, including traditional and newly emerging methodologies. It discusses the capabilities of the various analytical methods for flavour and fragrance analysis and guides the newcomer to the most appropriate techniques for specific analytical problems. Celebrating the founding of the Flavor Subdivision of the Agriculture and Food Chemistry Division of the American Chemical Society, this book provides an overview of progress made during the past 30-40 years in various aspects of flavor chemistry as seen by internationally renowned scientists in the forefront of their respective fields. In addition, it presents up-to-date findings in the areas of flavor chemistry, analytical methods, thermally produced flavors and precursors, enzymatically produced flavors and precursors, and sensory methods and results.

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Thermal processes play an important role in imparting desirable aromas to food which might otherwise have very bland flavors. In this new volume, internationally recognized experts in flavor chemistry present the latest research in analytical methodology, lipid-derived aromas, mechanistic studies, generation of selected aromas, generation of meat aromas, and extrusion and microwave processing foods. In addition, historical perspectives and regulatory viewpoints are included. The Springer Handbook of Odor is the definitive guide to all aspects related to the study of smell and their impact on human life. For the first time, this handbook aligns the senso-chemo-analytical characterization of everyday smells encountered by mankind, with the elucidation of perceptual, hedonic, behavioral and physiological responses of humans to such odors. From birth onwards we learn to interact with our environment using our sense of smell. Moreover, evolutionary processes have engendered a multi-faceted communication that is supported - even dominated - by olfaction. This compilation examines the responses of humans to odors at different stages of life, thereby building a foundation for a widely overseen area of research with broader ramifications for human life. The expert international authors and editor align aspects, concepts, methodologies and perspectives from a broad range of different disciplines related to the science of smell. These include chemistry, physiology, psychology,

material sciences, technology but also disciplines related to linguistics, culture, art and design. This handbook, edited by an internationally renowned aroma scientist with the support of an outstanding team of over 60 authors, is an authoritative reference for researchers in the field of odors both in academia and in industry and is also a useful reference for newcomers to the area.

Gas Chromatography in Plant Science, Wine Technology, Toxicology and Some Specific Applications

Flavor Chemistry

Chapter 16. Gas Chromatographic-Olfactometric Characterization of Key Aroma Compounds in Fresh and Frozen Lamb Meat using New Extraction Methods

Food Aroma Evolution

Evaluation of Vaporization Enthalpies and Vapor Pressures of Various Aroma and Pharmacologically Active Compounds by Correlation Gas Chromatography

Covers important methods and recent developments in food-aroma analysis. The text discusses the problem-solving capabilities of analytical methods for food flavours and aromas, showing how to select appropriate techniques for resolving the problems of major food trends. It includes a treatment of off-flavour and malodor analyses and new polymer sensor array instruments.

oCompilation and evaluation of the newest applications of chromatography for food science and technology
oEnumeration of chromatographic methods and critical discussion of results
This book presents a unique collection of up-to-date chromatographic methods for the separation and quantitative determination of carbohydrates, lipids, proteins, peptides, amino acids, vitamins, aroma and flavor compounds in a wide variety of foods and food products. Chromatography in Food Science and Technology presents a concise evaluation of existing chromatographic methods used for many food and food product macro and microcomponents. Chromatographic methods are compiled according to the character of the food components to be separated. The book's chapters deal separately with the different classes of food components, presenting both gas and liquid chromatographic methods used for their determination, and discussing the advantages and disadvantages of each. Unlike other references, Chromatography in Food Science and Technology is entirely devoted to the use of chromatography for food analysis, and focuses on practical, food-related examples. It treats the theoretical aspects of chromatography briefly, to the degree that the information helps the use and development of new analytical methods for the separation of any kind of food components.

HANDBOOK of Fruit and Vegetable Flavors A global PERSPECTIVE on the

latest SCIENCE, TECHNOLOGY, and APPLICATIONS The demand for new flavors continues to rise. Today's consumers want interesting, healthy, pleasurable, and exciting taste experiences, creating new challenges for today's food and flavor scientists. Fortunately, they can turn to this comprehensive reference on the flavor science and technology of fruits, vegetables, spices, and oils for guidance on everything from basic science to new technologies to commercialization. **Handbook of Fruit and Vegetable Flavors** is divided into two sections. The first section, dedicated to fruit flavor, is organized into five parts: **Part I: Biology, Chemistry, and Physiochemistry** **Part II: Biotechnology** **Part III: Analytic Methodology and Chemical Characterizations** **Part IV: Flavors for Fruit Commodities** **Part V: Flavors of Selected Dried Fruits** The second section, dedicated to vegetable flavor, is divided into two parts, covering biology, chemistry, physiochemistry, and biotechnology in the first part and flavor for vegetable commodities in the second part. Both the fruit flavor and vegetable flavor sections provide detailed coverage of such important topics as processing, extraction, flavor biosynthesis, and genetic engineering. Moreover, readers will find important details on regulations and requirements governing flavor additives as well as sanitation and safety in flavor manufacturing. Each of the chapters has been written by one or more leading experts in food and

flavor science. The authors represent more than ten countries, giving food and flavor scientists a unique global perspective on the latest flavor science, technology, and applications.

The bible of gas chromatography-offering everything the professional and the novice need to know about running, maintaining, and interpreting the results from GC Analytical chemists, technicians, and scientists in allied disciplines have come to regard Modern Practice of Gas Chromatography as the standard reference in gas chromatography. In addition to serving as an invaluable reference for the experienced practitioner, this bestselling work provides the beginner with a solid understanding of gas chromatographic theory and basic techniques. This new Fourth Edition incorporates the most recent developments in the field, including entirely new chapters on gas chromatography/mass spectrometry (GC/MS); optimization of separations and computer assistance; high speed or fast gas chromatography; mobile phase requirements; gas system requirements and sample preparation techniques; qualitative and quantitative analysis by GC; updated information on detectors; validation and QA/QC of chromatographic methods; and useful hints for good gas chromatography. As in previous editions, contributing authors have been chosen for their expertise and active participation in their respective areas. Modern Practice of Gas

Chromatography, Fourth Edition presents a well-rounded and comprehensive overview of the current state of this important technology, providing a practical reference that will greatly appeal to both experienced chromatographers and novices.

During Food Processing, Cooking, and Aging

Sensory and Chemical Evaluation of Aroma Formed Via Maillard Reaction Upon Microwave Irradiation and Conventional Heating

Flavor Release Analysis Using a Retronasal Aroma Simulator

Gas Chromatography-olfactometry

Gas Chromatography - Mass Spectrometry and Gas Chromatography-olfactometry Analysis of Aroma Compounds of Vanilla Pompona Schiede

Food may be nutritious, visually appealing and easy to prepare but if it does not possess desirable flavors, it will not be consumed. Food Flavors and Chemistry: Advances of the New Millennium primarily focuses on food flavors and their use in foods. Coverage also includes other important topics in food chemistry and production such as analytical methods, packaging, storage, safety and patents. Positive flavor notes are described, including ways of enhancing them in food. Conversely, methods for eliminating and reducing undesirable flavors are also proposed. Packaging aspects of foods, with respect to controlling sensory attributes, appearance and

microbiological safety are discussed in detail. There is also a section concentrating on the most recent developments in dairy flavor chemistry. This book will be an important read for all postgraduate students, academics and industrial researchers wanting to keep abreast of food flavors and their chemistry.

This book is an introduction to the world of aroma chemicals, essential oils, fragrances and flavour compositions for the food, cosmetics and pharmaceutical industry. Present technology, the future use of resources and biotechnological approaches for the production of the respective chemical compounds are described. The book has an integrated and interdisciplinary approach on future industrial production and the issues related to this topic.

Vanilla is one of the most widely used flavor ingredients and the second most expensive spice in the world. Only three of the 110-130 species of vanilla are cultivated and have significant economic importance: *Vanilla planifolia* Andrews, *Vanilla tahitensis* Moore and *Vanilla pompona* Schiede. Among the three, *Vanilla pompona* is the only specie that has been highlighted as relatively resistant to climate change and diseases. These attributes have made this species a candidate for cross-breeding programs with *V. planifolia* to produce a more robust vanilla for commercial use. The

chemical and aroma composition of V. planifolia and V. tahitensis have been extensively analyzed. Surprisingly, studies on the chemical and odor characterization of V. pompona are scarce even though this species is frequently referred to in the literature as the third genus in order of economic importance. No study has been undertaken to identify which compounds are odor-active in this particular species of Vanilla. This study provides a Gas Chromatography-Olfactometry (GC-O) analysis of Mexican Vanilla pompona Shiede for the first time. A preliminary study was performed to select a representative aroma extract for Gas Chromatography-Spectrometry (GC-MS) and GC-O analysis. Three extracts were produced using different aroma extraction techniques. Based on sensory evaluation and preliminary chemical characterization of the extracts, the ethanol-dichloromethane solvent extraction method was selected to produce aroma extracts for in depth characterization by GC-MS and GC-O. From the chemical characterization of the volatiles present in V. pompona extract, one hundred and twenty three volatiles were identified using GC-MS. Eighty compounds were identified in cured beans by means of Direct Thermal Desorption-Gas chromatography-Mass spectrometry (DTD-GC-MS). Twenty six of these constituents were identified in vanilla for the first time. Forty five aroma impact compounds were identified by GC-O analysis of the

extract of Vanilla pompona using a GC-NIF (Nasal Impact Frequency) modified method. Fifteen standard commercial samples were injected for confirmation and thirty five of the aroma impact compounds were characterized. The results of the GC-O analysis have indicated that the aroma profile consisted of thirteen primary aroma-impact compounds, eighteen identified as secondary aroma-impact compounds and thirteen odorants considered background. The aroma of Vanilla pompona extract is complex and rich with typical vanilla characteristics. It could be a valuable source for perfumery applications.

Recent Advances in Food and Flavor Chemistry

***Aroma Analysis of Two Coffee Brew Methods by Gas Chromatography
Olfactometry***

Hyphenated Techniques in Grape and Wine Chemistry

Thermally Generated Flavors

Practical Analysis of Flavor and Fragrance Materials