

## Ellixia Science

Ellixia Science concentrates on bridging A-Level Chemistry and First and Second Year University studies in Chemistry and Biochemistry.

The first five books concentrate on the spectrometric and spectroscopic analysis of natural food flavourings and pheromones.

Following an introduction, each chapter in the volumes commences with stating the empirical elemental data and formula mass and records the empirical and molecular formulas.

Subsequently the:-

- infrared spectrum
- mass spectrum and the
- multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) nuclear magnetic resonance (NMR) spectra

are presented and interpreted in detail.

Each chapter concludes with the determined molecular structure and the, IUPAC, systematic name. Systematic names, although essential for precise structure descriptions can be extremely difficult to determine and use and so each molecule is presented with the, so called, trivial name which is much more concise and much more manageable.

Ellixia History is an imprint of Ellixia Publishing Ltd. which also specialises in publishing Cornish history books – a rather disparate set of interests!

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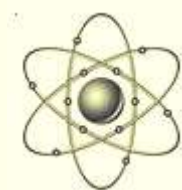
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## Volume I

### The Instrumental Spectrometric and Spectroscopic Analysis of Food Flavours Volume I



This is the first of three volumes in this series investigating *The Instrumental Spectrometric and Spectroscopic Analysis of Food Flavours*.

It comprises two sections:

**Section I** takes the reader from the concept of an atom as a hard, indivisible, ball through to the recognition that the atom comprises a small nucleus and electrons existing in orbitals around the nucleus whose position and momentum cannot be simultaneously determined.

The discovery of the existence of the nucleus, together with the previous discovery of the existence of the electron, led to the Rutherford concept of the atom which led on to the quantum mechanical description of the structure of the atom.

This then leads on to the application of physical techniques such as infrared spectroscopy, mass spectrometry and multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) magnetic resonance (NMR) spectroscopy.

**Section II** presents pen portraits of the scientists involved in the most exciting developments in chemistry and physics. Many people claim that scientists are cold and unemotional but in reality they are normal people. One man married a circus dancer, another (being Jewish) was unable to secure a position for a couple of years and became a renowned cocktail shaker in New York City. Many of them were extremely religious and defy the modern view of many that science has disproven the existence of God.

Werner Heisenberg, the so called Father of Quantum Mechanics, was an observant Jew and once wrote: The first gulp from the glass of natural sciences will turn you into an atheist, but at the bottom of the glass God is waiting for you.

This volume leads on to Volume II where the principles of infrared spectroscopy, mass spectrometry and NMR are applied to the determination of the structure of small molecules.

The first fifty pages can be previewed on the website (<http://ellixiascience.co.uk/volume1.html>) and purchased through all good online bookshops but the easiest way is through our partner Lulu (<https://www.lulu.com/en/us/shop/dr-nick-winstone-cooper/the-instrumental-spectrometric-and-spectroscopy-analysis-of-natural-food-flavours/paperback/product-e45reg.html>)

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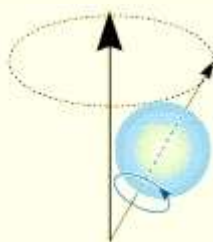
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## Volume II

### The Instrumental Spectrometric and Spectroscopic Analysis of Food Flavourings - Volume II



Volume II of *The Instrumental Spectrometric and Spectroscopic Analysis of Natural Food Flavourings* builds on the theory and principles of infrared spectroscopy, mass spectrometry and multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) nuclear magnetic resonance (NMR) spectroscopy.

This volume concentrates on addressing the principles for forty small molecules.

The classes of compounds include alcohols, ketones, ethers, haloalkanes, carboxylic acids and esters as well as aromatic compounds.

Each chapter presents the relevant spectra in the order of infrared and mass spectrum (where relevant peaks are highlighted) followed by presentation of the NMR spectra and analysis where the final structure is determined.

The first fifty pages can be previewed on the website (<http://ellixiascience.co.uk/volume2.html>) and purchased through all good online bookshops but the easiest way is through our partner Lulu (<https://www.lulu.com/en/us/shop/jasmine-tripconey-and-dr-nick-winstone-cooper/the-instrumental-spectrometric-and-spectroscopic-analysis-of-natural-food-flavourings/paperback/product-kdzver.html>)

## Volume III

### The Instrumental Spectrometric and Spectroscopic Analysis of Food Flavourings Volume III



Volume III of *The Instrumental Spectrometric and Spectroscopic Analysis of Natural Food Flavourings* builds on the theory and principles of infrared spectroscopy, mass spectrometry and multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) nuclear magnetic resonance (NMR) spectroscopy presented in Volume I and the previous study and investigation of small molecules described in Volume II.

This volume (Volume III) concentrates on using our understanding of the principles of the instrumental methods and applying it to the determination of the structures of natural food flavourings.

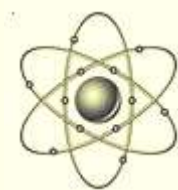
The natural food flavourings include malt, mushroom, pineapple, banana, grapes, pear, apricot, and herbs and spices including lemongrass thyme, clove and cinnamon.

Perhaps the most interesting molecules are pairs of mirror images which give rise to the flavouring of orange and lemon, spearmint and caraway and lavender and coriander which are mirror images of each other. Their profoundly different flavour arises simply from the different positioning of a single hydrogen atom

The first one hundred pages can be previewed on the website (<http://ellixiascience.co.uk/volume3.html>) here and purchased through all good online bookshops but the easiest way is through our partner Lulu (<https://www.lulu.com/en/us/shop/jasmine-tripconey-and-dr-nick-winstone-cooper/the-instrumental-spectrometric-and-spectroscopic-analysis-of-natural-food-flavourings-volume-iii-natural-food-flavourings/paperback/product-5je6dq.html>).

## Volume IV

### The Instrumental Spectrometric and Spectroscopic Analysis of Food Flavourings - Volume IV



Volume IV of this series *The Instrumental Spectrometric and Spectroscopic Analysis of Natural Food Flavourings - A Handbook* is a condensed and compact version of the first three volumes studying and investigating and building on the theory and principles of infrared spectroscopy, mass spectrometry and multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) nuclear magnetic resonance (NMR) spectroscopy presented in Volume I and the previous study and investigation of small molecules described in Volume II.

The natural food flavourings include malt, mushroom, pineapple, banana, grapes, pear, apricot, and herbs and spices including lemongrass thyme, clove and cinnamon, previously presented in Volume III are included in this compact volume.

Perhaps the most interesting molecules are pairs of mirror images which give rise to the flavouring of orange and lemon, spearmint and caraway and lavender and coriander which are mirror images of each other. Their profoundly different flavour arises simply from the different positioning of a single hydrogen atom

The first eighty pages can be previewed here (<http://ellixiascience.co.uk/volume4.html>) and purchased through all good online bookshops including Amazon but it is quickest to buy it through our printing partner, Lulu (<https://www.lulu.com/en/us/shop/jasmine-tripconey-and-nick-winstone-cooper/the-instrumental-spectrometric-and-spectroscopic-analysis-of-natural-food-flavourings/paperback/product-pw4gew.html?page=1&pageSize=4>).

## Volume V

### The Instrumental Spectrometric and Spectroscopic Analysis of Pheromones – A Handbook



Volume V of this series *The Instrumental Spectrometric and Spectroscopic Analysis of Pheromones - A Handbook* applies the principles and application of infrared spectroscopy, mass spectrometry and multinuclear ( $^1\text{H}$  and  $^{13}\text{C}$ ) nuclear magnetic resonance (NMR) spectroscopy.

Pheromones, commonly known as sex attractants are far more than that. They are fascinating and are discussed in nine associated pages which start here ([www.ellixiascience.co.uk/pheromones1.html](http://www.ellixiascience.co.uk/pheromones1.html)).

The first fifty pages can be previewed here (<http://ellixiascience.co.uk/volume5.html>) and purchased through all good online bookshops including Amazon but it is quickest to buy it through our printing partner, Lulu (<https://www.lulu.com/en/us/shop/jasmine-tripconey-and-nick-winstone-cooper/the-instrumental-spectrometric-and-spectroscopic-analysis-of-pheromones-a-handbook/paperback/product-qqz2jd.html?page=1&pageSize=4>).