

Elemental Analysis

Elemental Analysis

Elemental microanalysis is the determination of percentage levels of elements on milligram quantities of organic and organometallic compounds.

CHN Analysis

Instrumental techniques such as NMR and Mass Spectroscopy are routinely used to elucidate the structures of organic materials, but all have their limitations, particularly when it comes to contamination from inorganic species.

It is therefore essential to use a range of methods when fully characterising a sample, of which CHN analysis forms a part.



The determination of Carbon, Hydrogen and Nitrogen can play a very important role in the various processes of synthesis, separation, purification and the structural identification of organic compounds, both for research and quality control purposes.

CHN analysers provide a quick cost-effective method to check sample purity and to determine the empirical formula of new carbon based compounds.

Sulphur & Halogen Analysis

In many organic materials it is also necessary to analyse for Sulfur or Halogen atoms. Analysis of these elements usually relies on combusting the material in an Oxygen rich atmosphere, the products of the combustion being absorbed in an aqueous based solution. A variety of techniques can then be used to determine the Sulfur or Halogen content.

These techniques include:

- Classical Potentiometric Titrations
- Ion Chromatography
- ICP
- Butterworth have been using Ion Chromatography for the analysis of Fluorine, Chlorine, Bromine and Iodine since its introduction in the late 1970's, to negate the problems of co-precipitation associated with titrimetric analysis.



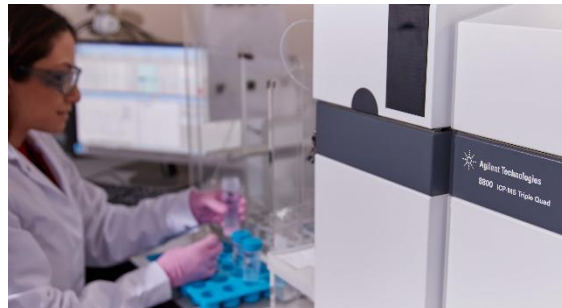
Metals Analysis

The determination of metals in pharmaceutical samples, whether they are active components or potential impurities, is of particular importance. Ensuring that the metals present are at the right concentrations or below their specified limit.

Oxygen combustion is also applicable to the analysis of metals and other elements such as Phosphorus.

However a more accurate method is by Closed Vessel Microwave Digestion followed by ICP or AAS, the advantages of which include:

- Automated digestion procedure allowing multiple sample preparations
- Accurate matrix matching



The use of either ICP-OES or ICP-MS enables the analyst to select the optimum Wavelength/Mass Number for any element to prevent interference from other components present in the sample matrix. The dynamic range of ICP allows analysis from ppt through to % levels.

Licence and Accreditation

Butterworth Laboratories Limited was founded in 1974 to undertake Elemental Microanalysis. This has resulted in a wealth of experience in this field. We are one of the few laboratories licenced accredited to undertake CHN analysis to GMP, GLP and ISO 17025.

Author Biography



John Welch CChem FRSC MRQA Associate Director – Business Operations

John started at Butterworth in 1987 as an Analytical Chemist and has had various roles including Quality Assurance Manager and Business Development Manager before becoming Associate Director of Business Operations in 2018.

For more information please contact us on +44 (0) 20 8977 0750, by email at info@butterworth-labs.co.uk or visit <http://butterworth-labs.co.uk/>