DSF
DEPARTMENT OF
PHARMACEUTICAL AND
PHARMACOLOGICAL SCIENCES

1222·2022 800 ANNI

UNIVERSITÀ DEGLI STUDI DI PADOVA

Technical Services and Scientific Equipments

Elemental Analysis and Atomic Absorption

Description: CHNS elemental analysis, also known as "organic elemental analysis" or "elemental microanalysis", determines the quantities of carbon (C), hydrogen (H), nitrogen (N), sulfur (S) present in a sample. It is a reliable and cost-effective technique for assessing the purity and chemical composition of compounds, which can be applied to a wide range of different sample types and solid, volatile and viscous liquids. It's important for determination of the composition, structure and purity of organic chemicals present in pharmaceutical products, both in the research and development phase and in the production phase.

Atomic absorption spectroscopy (AAS), in both flame and furnace graphite mode, is one of the best methods for determination of the metal concentrations in various specimens that are dissolved in acid. Mineralization and dissolution of samples are the vital steps in many procedures, especially in the case of low-metal concentrations. The technique can be applied for impurity tests for trace metals as well as for assay of various commonly occurring elements in pharmaceuticals.

Location:

Building A, Via Marzolo 5 Cod. Geotec: 02 035, 02 036 and 02 037

Facility manager and staff:

Dott.ssa Michela Paccagnella

Contacts

Phone: 049 8275374
e-mail: mic.paccagnella@unipd.it
9:00 a.m. - 5:00 pm Monday-Friday
Contact the manager before booking, asking about facility rates.

Scientific supervisors

For Elemental Analysis: Dott.ssa Mirella Zancato
e-mail: mirella.zancato@unipd.it

For Atomic Absorption: Prof. Stefano Dall'Acqua
e-mail: stefano.dallacqua@unipd.it

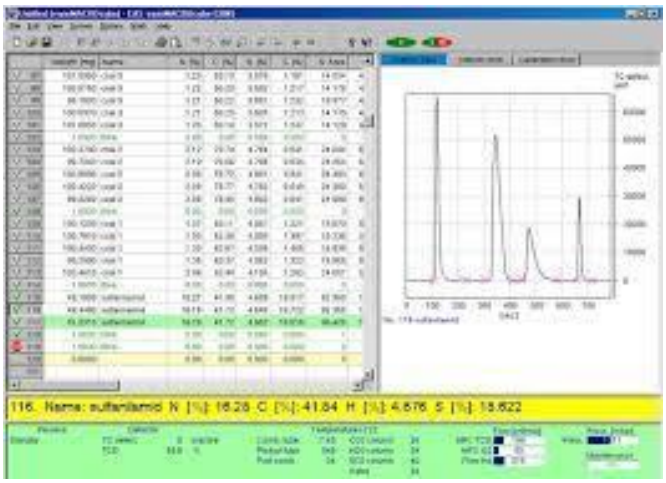
How to book

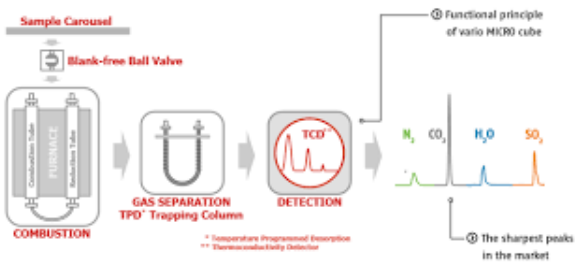
Users have to ask the manager for booking. For the Atomic Absorption you can check the booking on moodle (http://147.162.61.199/strumenti2/day.php). Instructions and request forms are provided to users on the methodologies and the applications. The analyses are carried out by the staff, in the presence of the users. The staff provide assistance and support in teaching duties and to external users. The maintenance and operation of the equipment and the set-up of methods of analysis are coordinated by the staff in charge. Another task is the supervision of the planning and use of devices.

Equipment

For Elementar Analysis: varioMicro Cube with autosampler

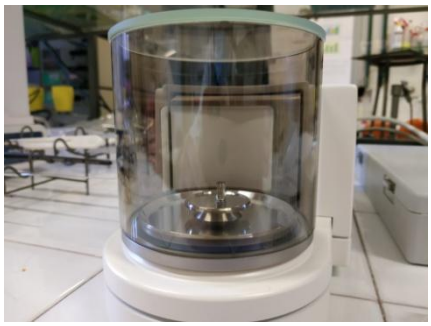
Elementar Analysensysteme GmbH





The vario MicroCube offers nitrogen, carbon, hydrogen and sulfur, determination by high-temperature combustion according to Dumas via a thermal conductivity detector (TCD). This TCD has been tuned for highest sensitivity, resulting in an analyzer that can quantify trace carbon and nitrogen with a detection limit of 10 µg/g or 10 ppm. Reliable results due to blank-free sample introduction, via “ball valve ®” and jet-injection of oxygen to the point of combustion which ensures complete conversion of the sample to measuring gas; a prerequisite for highly precise and matrix-independent elemental analysis. Separation of gaseous components via our TPD® column. This column releases individual gases at different temperatures. The release of a gas is only initiated when the prior gas peak has reached baseline. This results in perfect peak separation without overlap, and automatic optimization of the analysis time.

Ultra Analytical Balance Sartorius Cubis MSA 6.6S-000-DM



For Atomic Absorption: AA240Z Zeeman Furnace Grafite Agilent and 55B Flame Atomic Absorption Agilent

Based on the sensitive AC-modulated Zeeman technique, which is proven to give the best detection limits of any Zeeman spectrometer, the Agilent 240Z AA with up to 4 fixed lamp positions offers the highest sensitivity, performance and simplicity of operation. The instrument is supplied with the GTA 120 Zeeman graphite tube atomizer for superior graphite furnace performance. The furnace and flame are controlled by Agilent Worksheet Software with only one PC, which minimizes training by delivering rapid instrument set-up, easy operation, and simple method development. In this way you can have the widest linear dynamic range, from sub parts-per-billion to percent levels, allowing analysis of any sample. Dedicated atomizers eliminate setup and changeover times.

For Mineralization: StartD Milestone and Ethos X Mileston

The START D is equipped with a single industrial magnetron.Typical delivered power is 1200 watts, allowing rapid heating of high throughput rotors.A microwave diffuser located above the microwave cavity evenly distributes microwaves throughout the cavity,preventing localized hot and cold spots.The START D is equipped with the most advanced reaction sensors for temperature and pressure control. T