

1. High performance liquid chromatography (HPLC)

Company Name: Agilent

Column: Hi-plex H, NPN column

Detector: RID (Refractive index detector)

Purpose: For analysis of sugars, fatty acids, alcohols, organic acids etc.



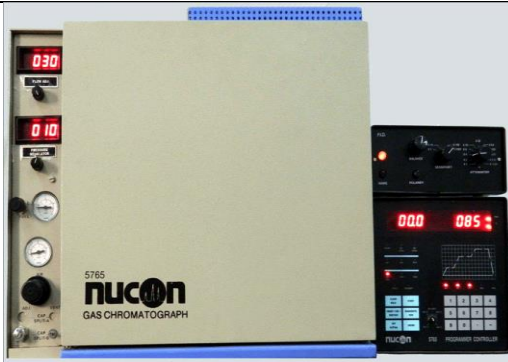
2. GC for Gas Analysis

Company Name: Nucon

Column: Porapak and molecular sieve

Detector: TCD (Thermal conductivity detector) and FID (Flame ionisation detector)

Purpose: For separation, identification and quantification of components of a mixture of gases.



3. Fast protein liquid chromatography

Company Name: AKTA pure

Column: UV and conductivity detector column HiprepTM16/60, HiTrap TMDEAE FF 5 ml

Conductivity Detector range: 0.000-999.9mS/cm

Flow rate range: 0.001-25.000ml/min

Pressure: 0-27.5 Mpa

Purpose: To analyse or purify mixtures of proteins.



4. UV-vis spectrophotometer

Company Name: PerkinElmer

Double beam operation: Yes

Range: 190-1100nm

Absorbance range: 3.2A

Purpose: Quantitative technique used to measure how much a chemical substance absorbs light.



5. Refrigerated centrifuge

Company Name: Eppendorf

Max.speed: 17,500rpm

Temperature range: -11 to +40°C

Acceleration time: 14s

Purpose: For the separation of fluids, gas or liquid, based on density. Separation is achieved by spinning a vessel containing material at high speed; the centrifugal force pushes heavier materials to the outside of the vessel.



6. Lyophiliser

Company Name: VirTis SP Scientific

Lowest condenser temperature: -75° C

No. of compressors: 1

Maximum deposition rate: 0.08 L/hour

Purpose: Executes a water removal process typically used to preserve perishable materials, to extend shelf life or make the material more convenient for transport.



7. Fermentor/Bioreactor

Company Name: New Brunswick

Vessel volume: 3.0 L and 7.5 L

Temperature range: 20-70°C

Agitation range: 50-1200rpm

pH range: 2-14

DO range: 0-200%

Purpose: For growing organisms (yeast, bacteria, or animal cells) under controlled conditions.



8. Biophotometer

Company Name: eppendorf

Optical system:

Double beam operation: Yes

Range: 190-1100nm

Absorbance range: 3.2A

Purpose: to evaluate the quality of nucleic acid samples (DNA, RNA) and proteins.



9. Karl Fischer Titrator

Company Name: Metrohm

Maximum rotational speed: ± 1700 -
1900rpm

Ambient temperature: +5...+45°C

Measuring range: 10 μ g - 200 mg

Purpose: The ideal method for water content determination in liquids, solids, and gases when it comes to water content determination in the trace range (10 μ g to 10 mg absolute water).



10. Electro-chemical Workstation

Company Name: Metrohm

Potential range: -10 V to 10 V

Maximum current : ± 0.4

Number of channels: 3

Potential and current accuracy: V: $\pm 0.2\% \pm$
2 mV & i: $\pm 0.2\% \pm 0.2\%$ of current range

Input impedance in Ohm: 100 G

Purpose: To perform Linear Sweep Voltammetry Potentiostatic/Galvanostatic, Cyclic Voltammetry Potentiostatic/Galvanostatic, FRA Impedance Potentiostatic/ Galvanostatic, Chronopotentiometry, Chronoamperometry



11. Thermal Gravimetric analyser

Company Name: Perkin Elmer

Model: STA 6000

Purpose: TGA is an analytical technique used to determine a material's thermal stability and fraction of volatile components by monitoring the weight change that occurs as sample is heated at constant rate.



12. Liquid Gas Chromatograph

Company Name: Agilent Technologies

Model: 7890A

Purpose: Gas chromatography is an analytical technique used to separate the chemical components of a sample mixture and then detect their presence in the sample liquid.



13. FTIR Spectrometer

Company Name: Agilent Technologies

Model: Cary 660 FTIR

Purpose: It is used for the identification of unknown compounds, to give quantitative information, such as additives or contaminants. It is used to definitely identify compounds, such as compounded plastics, blends, fillers, resins and adhesives etc.



14. Oxygen Stability Apparatus

Company Name: Dott. Gianni Scavini & C.

Model: AD2440-200

Purpose: It is used to check the ability of the sample (fat/oil/FAME) as how much resistance it provides for degradation in presence of the air. Oxygen stability is an important parameter for any kind of liquid fuel or feedstock.



15. Density Meter

Company Name: Anton Paar

Model: DMA 5000M

Purpose: It is used to perform accurate density measurements over a specified density, temperature and viscosity range. Measure density and concentration at 6 digit accuracy.



16. Cetane Index Analyzer

Company Name: Eraspec

Model: ES01

Purpose: It measures the concentration of fuel components, complex properties cetane number, and its cetane profile.



17. Automatic Flash Point Apparatus

Company Name: Tanaka

Model: ACO-7

Purpose: It is used to determine the temperature at which flammability occurs in a sample i.e. flash point of a sample. The lowest temperature at which its vapours ignite from an ignition source is the flash point of a material.



18. Kinematic Viscometer

Company Name: Lawler

Model: 86-18D

Operating Temp. – 20C -100C

Description - Open Jar, Protective Tube Shield withy0.01°C Digital Controller

Purpose: It is used for the determination of kinematic viscosity of liquid fuels and feedstock's.



19. Rotary Evaporator

Company Name: Heldolph

Model: Heizbad Hei-VAP

Operating Temp. – : from ambient to 600°C.

Description - Immersion depth up to 155 mm and the inclination angle from 20° to 80°, rotation speed : 10 - 280 rpm

Purpose: It is used for concentration, drying, separation, and solvent recovery in addition to the continuous distillation of volatile solvent.



20. Ramsbottom Carbon Residue

Company Name: Dott. Gianni scavini & C.

Model: AD0524-100

Operating Temp. – : from ambient to 600°C.

Description - Enamel finished steel case, benchtop version. Microprocessor controlled thermoregulator with PID action and built-in digital display 1 °C accuracy showing the temperature and the set-point.

Purpose: It is used to calculate the carbon residue of a fuel. The carbon residue value is considered by some to give an approximate indication of the combustibility and deposit forming tendencies of the fuel.

