

## Spectroscopic Techniques

### Atomic

- **AAS (Atomic Absorption and Emission)**

Flame atomization.  
 Possibility of background correction with Deuterium Lamp.



- **ET-AAS (Atomic Absorption)**

Electrothermal atomization.  
 Background correction with Zeeman Effect.



Microwave-assisted acid digestions are performed when combined with an (ET)AAS analysis.

#### APPLICATIONS

Quantification of metals. E.g.: iron content in soil; heavy metal content in wood; metal content in drinking water; nutrient content in dehydrated food products; metal content in sweat simulation.

### Molecular

- **FTIR (Infrared)**

ATR or Transmission module.  
 Range: 4000 - 400  $\text{cm}^{-1}$ .



- **NIR (Near Infrared)**

Diffuse Reflectance (NIRA) or Transmission module. Range: 14700 - 2000  $\text{cm}^{-1}$ .



- **Fluorimeter**

Excitation range: 200 - 800 nm.  
 Emission range: 200 - 800 nm.  
 Thermostatic bath up to 80 °C.



#### APPLICATIONS

Identification/quantification of molecules and functional groups. E.g.: fiber identification; polymers; nanoparticles; organic and inorganic compounds.

## Physical & Structural Properties

- **Microviscometer / Densimeter**

Dynamic viscosity: 0.3 - 10 000 mPa·s (measurement in glass capillary, by the rolling-ball principle). Shear rate: 0.5 - 1000  $\text{s}^{-1}$ .

Density: 0 - 3  $\text{g/cm}^3$ .

Temperature range: 5 - 100 °C.  
 Low sample volume.



- **Refractometer**

Refractive index: 1.26 - 1.72 nD.  
 Temperature range: 4 - 85 °C.



- **DLS (Dynamic Light Scattering)**

Particle size: 0.3 nm - 10  $\mu\text{m}$ .  
 Zeta Potential: -1000 a +1000 mV.  
 Transmittance.

Temperature range: 0 - 90 °C  
 (Zeta up to 70 °C).



#### APPLICATIONS

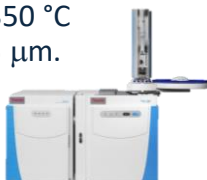
Viscosity, density, refractive index and transmittance analysis (e.g.: nanoparticle suspensions; oils; molecular weight of polymers; degree Brix in honey and jam); particle size and charge analysis (e.g.: liposomes; nanoparticles).

## Chromatographic Techniques

### Gaseous

- GC-MS**

Normal phase capillary column. Column Temp. <sub>max.</sub>: 330 °C (isothermal) / 350 °C (gradient). 60 m x 0.25 mm x 0.25 µm.



- GC-FID**

Normal phase capillary column for separation of FAMES (Fatty Acid Methyl Esters). Column Temp. <sub>max.</sub>: 250 °C (isothermal) / 260 °C (gradient). 25 m x 0.22 mm x 0.25 µm.

Normal phase capillary column. Column Temp. <sub>max.</sub>: 325 °C (isothermal) / 350 °C (gradient). 60 m x 0.25 mm x 0.25 µm.



#### APPLICATIONS

Separation of volatile compounds. E.g.: identification and quantification of fatty acids in food; identification of specific compounds in coatings.

### Liquid

- HPLC**

DAD detector. D&W lamp. Autosampler refrigeration up to 4 °C. Column without temperature control.

- UHPLC**

Fluorescence detector. Column and autosampler with temperature control. Suitable for UPLC and HPLC columns.



- Ionic**

Anionic exchange column: 4 µm, 4 x 250 mm.



#### APPLICATIONS

Separation of non-volatile compounds. E.g.: identification and quantification of phenolic compounds and organic acids in food and cosmetic matrices; determination of anions in irrigation waters.

## Thermal Analysis

- DSC (Differential Scanning Calorimetry)**

Temperature range: -70 to 400 °C. Nitrogen atmosphere

- STA (TGA-DTA, Thermogravimetry)**

Temperature range: room temp. to 1000 °C. Nitrogen atmosphere and/or oxygen.



#### APPLICATIONS

Study of material properties as a function of temperature. E.g.: glass transition on polymers; dehydration of resins; phase transitions in surfactants; thermal stability of compounds, films and fabrics.

## Other services

- Air Quality**

MDI (Methylene Diphenyl disocyanate)

Total Acidity

Total Basicity.



- Cold room (4 °C)**