

FT-IR spectrometer with microscope

NXR FT-Raman

Measurement of vibrational spectra of solid and liquid compounds in order to:

- determine the identity of molecules by spectra correlation
- detect structural changes at molecular level
- establish secondary and tertiary structure ratio in macromolecules
- equipped with FT-IR microscope - allows spectroscopic identification of compounds observed under the lens



FT-IR spectrometer + VCD

NICOLET 8700

Determination of functional group's configurations of optically active compounds

- ATR sampling accessory
- spectral range 4000 – 350 cm^{-1}



CD spectropolarimeter

Jasco J-815

Circular and magnetic circular dichroism spectra measurements allow to follow conformational transitions of biopolymers (proteins, nucleic acids) and determine secondary and tertiary structure ratio in biomacromolecules

- wavelength range: 185 - 600 nm
- temperature range: 10 -110 °C



Spectrofluorimeter

HORIBA FluoroMax - 4

Measurement of excitation and emission fluorescent spectra
- steady-state or time-resolved

- light source: 150 W xenon lamp
- excitation wavelength range: 200 - 950 nm
- emission wavelength range : 200 - 950 nm
- emission and excitation slit: continuously adjustable by PC
- integration time: 1 ms – 160 s
- emission detector: range 200 – 850 nm

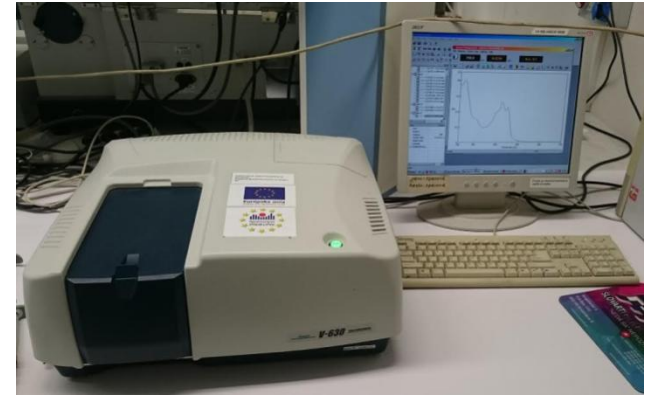


UV-VIS spectrophotometer

Jasco V - 630

Measurement of absorption spectra in UV and VIS region, spectral analysis of molecular absorption spectra, quantitative and qualitative analysis of biomacromolecules

- double-beam spectrophotometer
- light source: deuterium and halogen lamp
- wavelength range: 190 - 1100 nm
- detector: photodiode
- spectral bandwidth: 1.5 nm
- wavelength accuracy: ± 0.2 nm
- scan speed: 10 - 8 000 nm/min



UV-VIS-NIR spectrophotometer

Shimadzu UV-3600

Measurement of absorption spectra in UV, VIS and NIR region. Quantitative and qualitative analysis of biomacromolecules.

- liquid samples
- double beam device
- light source: halogen and deuterium lamp
- wavelength range: 185 – 3300 nm
- detectors: PbS, InGaAs, PMT
- wavelength accuracy UV-Vis/NIR: ± 0.2 nm/ ± 0.8 nm
- scan speed UV-Vis /NIR: 4,500 nm/min/ 9,000 nm/min



Multimode well-plate reader

Synergy MX BioTek

Measurement of structural properties of biomacromolecules, aggregation and dynamic activity of biomacromolecules

- absorbance /fluorescence and luminescence measurements in wavelength range 200-999nm/300-700nm
- FRET – fluorescent resonance energy transfer (donor-acceptor distance 10nm)
- designed for single cuvette or well-plates

contact person: Z. Gažová gazova@saske.sk



Differential scanning microcalorimeter

MicroCal – VP – DSC

Characterization of stability and thermodynamics of conformational transitions of biomacromolecules – proteins, nucleic acids, lipids and their complexes

- determination of transition temperature T_m , Gibbs energy change ΔG , entropy change ΔS , excess heat capacity ΔC_p
- temperature range: -10 °C – 130 °C
- sample volume: 700 μ l
- maximal scan rate: 90 °C/h
- sensitivity: 0.25 μ cal/°C

contact person: D. Fedunová fedunova@saske.sk



Isothermal titration calorimeter

MicroCal iTC 200

Measurement of biomolecular interactions in solutions – determination of binding affinity, stoichiometry, enthalpy and entropy change of biomacromolecule – ligand interaction

- high sensitivity:(~ 10 µg protein concentration)
- sample cell volume: 280 µl
- injection syringe volume: 40 µl
- affinity K_D range: 10^{-2} to 10^{-9} M
- dissociation constant range: 10^{-9} M - 10^{-12} M
- temperature range: 2 °C – 80 °C

contact person: D. Fedunová fedunova@saske.sk



Surface plasmon rezonancia

SPR – Navi 220 A

Characterization of small molecule – biomacromolecule interactions (proteins, nucleic acids, lipids, anti-bodies, nanoparticles)

- determination of affinity and number of binding sites for ligands
- determination of the effect of structural changes on binding mechanism
- well-plate system - well volume:1 mikrol
- temperature range: 4 - 40 °C

contact person: Z Gažová gazova@saske.sk

