

LABORATOR DE CERCETARE OPTOMAT

OPTIMAL ORGANIC MATERIALS for ADVANCED TECHNOLOGY

Departamentul Științe ale naturii, facultatea de Științe, Ed. Fizică și Informatică

Responsabil laborator: conf.univ.dr. **Carmen Mihaela Topală**

Sala S021

Anul înființării 2017

Domeniul activităților de cercetare

Domeniul științific: **Chimie și Biochimie**

Direcții de cercetare:

Compuși naturali și de semisinteză

Studiul unor molecule biogene

Nanostructuri. Sinteze. Caracterizare

Controlul analitic al calității mediului și tehnici de depoluare

Contribuții la studiul fizico-chimic al interacției unor substanțe fiziologic active cu biopolimeri

Servicii de cercetare oferite: spectroscopie UV-Vis, FTIR, extracții prin tehnici: SFE, Soxhlet, chemometrie

Lista personalului centrului de cercetare:

3.1. Personal didactic și de cercetare

Nr.crt	Nume și prenume	Statut (Titular/Asociat/Drd.) – CV cu link pe pag. facultatii
1.	Topală Carmen Mihaela	titular
2	Tătaru Lavinia Diana	titular
3	Vîjan Loredana Elena	titular
4	Vulpe Mădălina	drd

Infrastructura centrului de cercetare:

JASCO FT/IR-6300 series Spectrometer

Spectral range expandable to 15000-20 cm⁻¹ standard wavenumber range 7800 - 350 cm⁻¹, spectral resolution 0,07 cm⁻¹, S/N ratio 50000:1 ~ 200000:1 RMS, gold coated interferometer mirrors. DTGS detector, multitasking operation, zooming and scale change, trace

functions, smoothing, baseline correction, CO₂ band elimination, ATR correction, peak picking, peak height, peak area, arithmetic processing, derivatives, %T/Abs conversion, KM conversion, KK conversion

PIKE VeeMax II Variable angle single reflexion ATR

Continuously variable incidence angle between 30° and 80° - changing depth (0,4 – 46 µm) penetration allows depth profiling. Can be also used as variable angle specular reflexion accessory. Purgeable design, integrated position for optional polariser. Delivered with flat ZnSe plate, 45°, liquid retainer and pressure clamp for solids films or powders.

Gladi ATR Single Reflection ATR for Jasco FTIR with recognition

Heated Diamond Crystal Plate

Temperature Control Module, PC Control

Diffuse reflectance accessory for FTIR

Automated Melting Point System

The control is done by a touch screen. During the measurement, the instrument calculates 3 characteristic temperatures per capillary and it is possible to record 6 temperature values manually. The instrument is equipped with a ceramic-insulated heating chamber accommodating 3 capillaries simultaneously and with a built-in fan for rapid re-cooling.

Water stills for double distillation

Capacity 4l/h, cooling water consumption 120l/h, size 550x280x570mm, power kW 6.5, total weight 23kg.

Polarimeter

Touch type graphical display - "touch screen" measuring mode: optical rotation, sugar scale, measuring range: ± 90 °, resolution 0.001 °, 0.01 ° Z, 0.1 g / ml; accuracy: 0.003 °; 0.01 ° Z ± 0.5 g / 100 ml; Reproducibility: 0.002 ° for measuring ± 90 ° 1sec; Light source: Tungsten-Halogen, 6V with 589 nm filter; Temperature Sensor: PT100, temperature measurement from 0 to 99.9 ° C Temperature resolution 0.1 ° C

Automated melting Point System OPTIMELT

Range of temperature 30-360°C, heating rate 1°/min.

Supercritical Fluid Extraction System Upgradeable to Supercritical Fluid Chromatography System

Programmable pump with peltier cooled head to delivery mobile phase in SFE/SFC(HPLC) system. Procedure - constant flow or constant pressure, flow rate 1 ul / min - 10 mL / min, max. 50 MPa; pre-cooling temperature of -10 ° C, cooling can be disengaged

Back pressure regulator – of precision, programmable, microprocessor controlled; thermostatic valve for pressure control with adjustable resistance; range: 1.0 - 50.0 MPa, adjustable in steps of 0.1 MPa pressure accuracy: $\pm 2\%$

Rheodyne injector with support plate and tubing needed to supercritical fluid extraction system.

Thermostat of extraction; ensure mixing and the temperature of the fluid; the location for the injector and for the switching and closing valves; thermostatic condition for the extraction vessel in SFE (for EV-1, EV-2 and EV-4), thermostatic condition in SFC and HPLC.

UV/VIS UV-2075 Detector with monochromator, spectral acquisition 'on the-fly' [190-600,nm

Module of spectral extension to 1100 nm, with 1 nm resolution, Jasco V370 for SFE JASCO System, A046661798 series. It has the following characteristics:

- 190-1100 nm - Wavelength Range
- 1 nm - Resolution
- 10-8000 nm / min - Scan speed

Rotary Evaporator Buchi

Analytical balance

Pro Analytical Balance 110g 0.1 mg

Magnetic stirrers

Ceramic hob with heating controller with the ability to connect an external magnetic stirred bar

Digital centrifuge EBA 20

Rotor with 8 seats controlled by a microprocessor, digital display

Proiecte / contracte de cercare / colaborări relevante

Nr. crt .	Denumire Proiect	Competiți a/ societatea	Numele autorilor	Numele autorilor, membrii ai CC	Parteneri	Rezultate relevante
1	Optimizarea proceselor de devirozare la plante horticole prin chimioterapie in vitro si electroterapie în scopul încadrării în cerintele ue privind calitatea	PCCA-1, contract 104/2012	Topala C. Tătaru L. Vijan L. Oprescu B. Soare C. Popescu M.	Topala C. Tătaru L. Vijan L Vulpe M.	UPIT INCDBH-Ștefănești Argeș INCDCSZ-Brașov	8 articole ISI 15 comunicări conferințe internaționale și naționale 7 articole BDI 4 tehnologii

	mediului si a produselor agroalimentare (SANOPLANT)		Deliu N. Giosanu D. Vulpe M.			http://sanoplant.org.ro/docs/raport_final.pdf
2	Tehnologii si materiale avansate pentru aplicatii in optoelectronica (OPTOMATEH)	Contract PN II Capacități 126/14.09.2007	Topală C. Tătaru L. Vijan L. Iosub I. Oprescu B. Ducu C.	Topală C. Tătaru L. Vijan L.	Universitatea din Craiova - UCV Partener 1: Universitatea "Politehnica" Bucuresti - UPB Partener 2: Universitatea din Pitesti - UP	4 articole ISI Achizitii de echipamente de cercetare http://cis01.central.ucv.ro/proiectecercetare/optomateh/echipamente_rom.html