

ANEXA 8.1

Dotarea aferenta laboratoarelor de cercetare-dezvoltare

A. Echipamente

- A1. Denumire: sistem de determinare BOD
A2. Caracteristici, performante: Sistem de masurare prevazut cu agitare ce permite analiza simultana BOD pentru 12x510 ml
A3. Aplicatii ce pot fi efectuate: măsurare consum biochimic de oxigen
A4. Sursa de finantare: HURO
A5. Valoare estimata: 4.795,08 ero
A6. Anul achizitiei:2014



- A1. Denumire: multiparametru HI9829
A2. Caracteristici, performante: Sistemul sa permita masuratori de pH si potential de oxido-reducere, conductivitate si salinitate, concentratie de oxigen dizolvat, temperatura, calibrare si masurare conform GLP
A3. Aplicatii ce pot fi efectuate: măsurare pH, conductivitate, temperatură, oxigen dizolvat din ape
A4. Sursa de finantare: HURO
A5. Valoare estimata:3.644,36 euro
A6. Anul achizitiei: 2014



- A1. Denumire:Algae Torch; BBE
A2. Caracteristici, performante: determinare in timp real continutul de clorofila a cyanobacteriilor si clorofila totala din microalge in rauri si lacuri
A3. Aplicatii ce pot fi efectuate: determinarea clorofilei acvatice
A4. Sursa de finantare: HuRo
A5. Valoare estimata: 12.577,32 euro
A6. Anul achizitiei: 2014



A1. Denumire: Benthos Torch BBE
A2. Caracteristici, performante: determine simultan, in timp real, continutul de cianobacterii, alge verzi si diatomee
A3. Aplicatii ce pot fi efectuate: pt. determinarea algelor fitobentonice;
A4. Sursa de finantare: HuRo
A5. Valoare estimata: 15.790,16 euro
A6. Anul achizitiei: 2014



A1. Denumire: Microscop de cercetare
A2. Caracteristici, performante: Microscop upright cu functionare in lumina transmisa prin metoda "camp luminos
A3. Aplicatii ce pot fi efectuate: investigare preparate fixe în câmp luminos
A4. Sursa de finantare: HuRo
A5. Valoare estimata: 39.331,56 euro
A6. Anul achizitiei: 2014



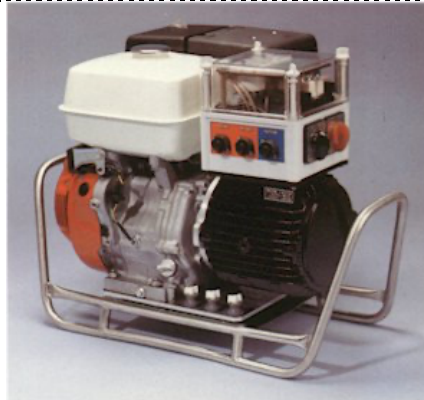
A1. Denumire: Stereomicroscop
A2. Caracteristici, performante: domeniul de marire aproximativ 7x – 110x
A3. Aplicatii ce pot fi efectuate: investigare preparate opace
A4. Sursa de finantare: HuRo
A5. Valoare estimata: 12.938,16 euro
A6. Anul achizitiei: 2014



A1. Denumire: microscop inversat
A2. Caracteristici, performante: Microscop inversat pentru investigatii in lumina transmisa prin camp luminos si contrast de faza, cu dirijarea informatiei luminoase catre portul lateral / oculare dupa cum urmeaza - 0:100%, port lateral:oculare% si 100:0%.
A3. Aplicatii ce pot fi efectuate: investigații în câmp luminos, câmp întunecat, UV
A4. Sursa de finantare: HuRo
A5. Valoare estimata: 30.459,36 euro
A6. Anul achizitiei: 2014



A1. Denumire: Aparat electric electonarcoza - 250W, 300-600V, 15-25 A + agregat electronic electonarcoza (cu acumulatori)
 A2. Caracteristici, performante: Tensiuni la iesire: reglabil in domeniile 150-300V si 300-600V DC
 A3. Aplicatii ce pot fi efectuate: pescuit stiintific
 A4. Sursa de finantare: HuRo
 A5. Valoare estimata: 8.742,00 euro
 A6. Anul achizitiei: 2014



A1. Denumire: sistem de micromanipulare pentru microscop
 A2. Caracteristici, performante: Injector pneumatic cu seringă de capacitate minim 4 ml, volum injectat minim 450 ml/rotatie. Micromanipulator hidraulic cu joystick (pozitionare inversa, tip "drop handle"), pentru comanda deplasarii pe trei directii, reglabil, cu gradatii, design simetric pentru amplasare pe ambele laterale ale microscopului. Cursa maxima pe fiecare directie pentru deplasarea fina minim 10 mm, rezolutie mai buna sau egala cu 2.5 μm /gradatie.
 A3. Aplicatii ce pot fi efectuate: interventii la nivel celular, introducere de lichide, particule solide, medicamente, etc.
 A4. Sursa de finantare: HuRo
 A5. Valoare estimata: 33.435,36 Euro
 A6. Anul achizitiei: 2014

Vezi foto microscop inversat

A1. Denumire: Distilator / bidistilator (pt. apă)
 A2. Caracteristici, performante: Debit distilat 4 l/h – bi – distilata
 pH 5,6 - 6,0
 Pirogenitati Fara
 Conductivitate < 1 $\mu\text{S/cm}$
 Putere de incalzire 6kW
 Presiunea la alimentare (min-max) 70 – 560 kPa
 Debit minim al apei brute 2 l/min
 Dimensiuni (mm) 750 x 490 x 380
 Greutate, kg 29
 A3. Aplicatii ce pot fi efectuate: orice are nevoie de apa distilata / bidistilata (NU ultrapura!)
 A4. Sursa de finantare: Interreg V-A Romania-Hungary
 A5. Valoare estimata: 6435 euro fara TVA



A6. Anul achizitiei: 2018

A1. Denumire: Balanta analitica

A2. Caracteristici, performante: Capacitate cantarire maxima: 320 g

Citare: 0,1 mg

A3. Aplicatii ce pot fi efectuate: orice are nevoie de cântărire de precizie

A4. Sursa de finantare: Interreg V-A

Romania-Hungary

A5. Valoare estimata: 1800 euro fara TVA

A6. Anul achizitiei: 2018



A1. Denumire: Multiparametru portabil

A2. Caracteristici, performante: pH, conductivitate, oxigenometru

Capacitate memorie: 500 inregistrari

Citare: cu senzori separate pentru fiecare parametru

A3. Aplicatii ce pot fi efectuate: determinare cu precizie a pH, conductivitatii si oxigenului din medii apoase

A4. Sursa de finantare: Interreg V-A

Romania-Hungary

A5. Valoare estimata: 3715 euro fara TVA

A6. Anul achizitiei: 2018



A1. Denumire: Spectrofotometru UV-VIS

A2. Caracteristici, performante: Domeniul spectral: 190 – 1100 nm

Viteza de scanare: selectabila

Moduri de măsurare – absorbanță si transmitanță, analiză cantitativă (concentrație),

A3. Aplicatii ce pot fi efectuate: determinare cu precizie absorbantei, extinctiei, concentratiei mediilor lichide apoase

A4. Sursa de finantare: Interreg V-A

Romania-Hungary

A5. Valoare estimata: 6736 euro fara TVA

A6. Anul achizitiei: 2018



A1. Denumire: Traductor de intensitate luminoasa

A2. Caracteristici, performante: Tipul de radiatie luminoasa masurata: Radiatia activa fotosintetic (la lungimi de unda cuprinse intre 400 si 700 nm) exprimata in $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$. Sensibilitatea semnalului: Intre 5HA si 10 HA per $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ Linearitatea semnalului: Deviatie de maxim 1% pana la 10000 $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$

A3. Aplicatii ce pot fi efectuate: determinare intensitatii luminii fotosintetic active (PAR)

A4. Sursa de finantare: Interreg V-A Romania-Hungary

A5. Valoare estimata: 2775 euro fara TVA

A6. Anul achizitiei: 2018

A1. Denumire: Agitator magnetic cu incalzire

A2. Caracteristici, performante: Numar pozitii de agitare: 1 Capacitate mx. de agitare (H₂O) [l]: 20 Iesire motor [W]: 9 Directia de agitare: Dreapta

A3. Aplicatii ce pot fi efectuate: omogenizarea / obtinerea solutiilor

A4. Sursa de finantare: Interreg V-A Romania-Hungary

A5. Valoare estimata: 1450 euro fara TVA

A6. Anul achizitiei: 2018



A1. Denumire: Baie ultrasonica

A2. Caracteristici, performante: Voltaj / Frecventa: 100-120/220-240V / 50/60 Hz Frecventa ultrasonare: 37 kHz Consum S300: 300 W Consum S300H: 1500 W Putere incalzire (pentru unitatile cu incalzire): 1200 W

A3. Aplicatii ce pot fi efectuate: pastrarea la cald a solutiilor; spalarea diverselor obiecte de laborator, care nu se pot spala clasic (ex.: pipete); extractii vegetale; etc.

A4. Sursa de finantare: Interreg V-A Romania-Hungary

A5. Valoare estimata: 2466 euro fara TVA

A6. Anul achizitiei: 2018



A1. Denumire:

Hota verticala cu flux laminar V, cu robinet de gaz, scaun, suport, echipamente de protectie (ochelari, masti, manusi), filtru HEPA de rezerva, prefiltru, lampa UV, substante si batiste dezinfectante;

A2. Caracteristici, performante:

Asigura flux vertical de aer steril;

A3. Aplicatii ce pot fi efectuate:

Inocularea celulelor si tesuturilor vegetale;

A4. Sursa de finantare: POSDRU 77082;

A5. Valoare estimata: 11 000 lei;

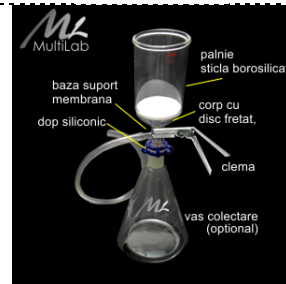
A6. Anul achizitiei: 2011.



A1. Denumire: Lampă bactericida 30 W, pe suport mobil;
 A2. Caracteristici, performante: Mobilitate;
 A3. Aplicatii ce pot fi efectuate: Sterilizare aer camera inoculare;
 A4. Sursa de finantare: POSDRU 77082;
 A5. Valoare estimata: 800 lei;
 A6. Anul achizitiei: 2011.



A1. Denumire: Pompa de vid, filtre Milipore
 A2. Caracteristici, performante: Filtrare performanta
 A3. Aplicatii ce pot fi efectuate: Sterilizarea prin filtrare a mediilor de cultura;
 A4. Sursa de finantare: POSDRU 77082
 A5. Valoare estimata: 1 800 lei;
 A6. Anul achizitiei: 2011.



A1. Denumire: Balanta tehnica
 A2. Caracteristici, performante: Standard
 A3. Aplicatii ce pot fi efectuate: Cantariri;
 A4. Sursa de finantare: POSDRU 77089;
 A5. Valoare estimata: 1 000 lei;
 A6. Anul achizitiei: 2011.



A1. Denumire: Baie de ultrasunete, stand de filtrare, cos de inox
 A2. Caracteristici, performante: Ultrasonicare
 A3. Aplicatii ce pot fi efectuate: Sterilizarea prin US
 A4. Sursa de finantare: POSDRU 77082;
 A5. Valoare estimata: 3 800 lei
 A6. Anul achizitiei: 2011.



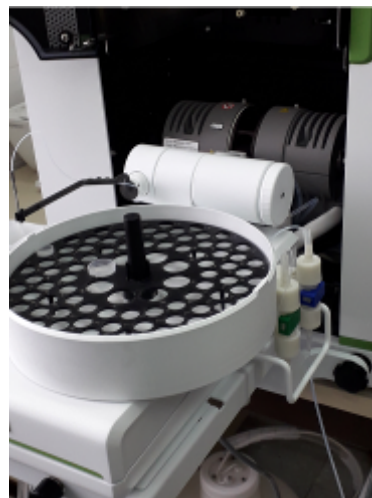
A1. Denumire: Suport prelucrare stocare imagini; adaptator camera foto; obiective macro, micro; card, blitz
 A2. Caracteristici, performante: Efectuare poze macro, micro;
 A3. Aplicatii ce pot fi efectuate: Baza de date;
 A4. Sursa de finantare: POSDRU 77082
 A5. Valoare estimata: 7 000 lei
 A6. Anul achizitiei: 2011



A1. Denumire: Pompa de vid;
 A2. Caracteristici, performante: Vidare;
 A3. Aplicatii ce pot fi efectuate: Sterilizare medii de cultura;
 A4. Sursa de finantare: POSDRU 77082
 A5. Valoare estimata: 1 800 lei
 A6. Anul achizitiei: 2011.



A1. Denumire: spectrofotometru cu absorbție atomică cu flacără și cuptor de grafit
 A2. Caracteristici, performante: Model Pinaacle 900T, producător PerkinElmer; este prevăzut cu două atomizoare: flacără și cuptor cu corecție de fond pe bază de efect Zeeman cu câmp magnetic longitudinal; sistemul este dotat cu 8 lămpi cu sursă integrată de alimentare pentru lămpi catodice cavitare și lămpi de energie înaltă
 A3. Aplicații ce pot fi efectuate: analize rapide și precise ale cationilor metalici din soluții, în concentrații de ordinul ppm și ppb.
 A4. Sursa de finanțare: proiect ROHU 29
 A5. Valoare estimată: 467,551.00
 A6. Anul achiziției: 2018



A1. Denumire: sistem cromatograf de schimb ionic
 A2. Caracteristici, performante: Model DIONEX AS-DV, Thermoscientific, USA
 A3. Aplicații ce pot fi efectuate: analiza rapidă și precisă a anionilor prezenți în concentrații mici, dar și în urme
 A4. Sursa de finanțare: proiect ROHU 29
 A5. Valoare estimată: 243,656.07
 A6. Anul achiziției: 2018



A1. Denumire: nișă chimică cu exhaustare și sistem de stocare substanțe agresive
 A2. Caracteristici, performante: Model Kottermann, fabricată în Germania
 A3. Aplicații ce pot fi efectuate: permite efectuarea analizelor cu compuși toxici, fără ca persoana care lucrează să fie expusă mediului toxic, sistemul avansat de exhaustare reducând la minimum expunerea în noxe
 A4. Sursa de finanțare: proiect ROHU 29
 A5. Valoare estimată: 101,376.10
 A6. Anul achiziției: 2018



A1. Denumire: baie termostată RAYPA
 A2. Caracteristici, performante: Model BAD-2, fabricată în Spania
 A3. Aplicații ce pot fi efectuate: încălzirea și menținerea temperaturii constante, selectate până la 100 °C, pe parcursul analizelor
 A4. Sursa de finanțare: proiect ROHU 29
 A5. Valoare estimată: 4768.33
 A6. Anul achiziției: 2018



A1. Denumire: balanță analitică cu dublă precizie

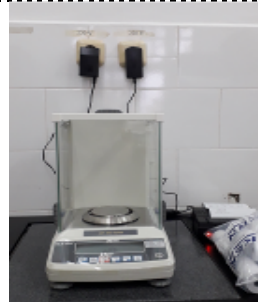
A2. Caracteristici, performante: Model KERN ABT 220-5DNM

A3. Aplicații ce pot fi efectuate: cântărirea probelor cu precizie până la 5 zecimale

A4. Sursa de finanțare: proiect ROHU 29

A5. Valoare estimată: 21,748.44

A6. Anul achiziției: 2018



A1. Denumire: agitator magnetic cu încălzire IKA

A2. Caracteristici, performante: Model RET CV S000, fabricat de IKA, Germania

A3. Aplicații ce pot fi efectuate: agitarea probelor lichide cu posibilitatea menținerii unei anumite temperaturi a probelor

A4. Sursa de finanțare: proiect ROHU 29

A5. Valoare estimată: 8,337.73

A6. Anul achiziției: 2018



A1. Denumire: Titrator potențiometric + titrator determinare umiditate prin metoda Karl Fischer

A2. Caracteristici, performante: TitroLine 7750, fabricat în Germania

A3. Aplicații ce pot fi efectuate: sistem automat de titrare a soluțiilor apoase și din solvenți organici

A4. Sursa de finanțare: proiect ROHU 29

A5. Valoare estimată: 62,286.98

A6. Anul achiziției: 2018



A1. Denumire: Sistem de obținere a apei distilate și bidistilate

A2. Caracteristici, performante: Model EVOQUA

A3. Aplicații ce pot fi efectuate: obținerea apei distilate necesare preparării soluțiilor în laborator; producerea apei ultrapure necesare pentru pregătirea soluțiilor utilizate la AAS și IC.

A4. Sursa de finanțare: proiect ROHU 29

A5. Valoare estimată: 35,163.19

A6. Anul achiziției: 2018



A1. Denumire: Sistem filtrare vid

A2. Caracteristici, performante: Millipore

A3. Aplicații ce pot fi efectuate: filtrare la vid înaintat

A4. Sursa de finanțare: proiect ROHU 29

A5. Valoare estimată: 9,569.62

A6. Anul achiziției: 2018



B. Sisteme de calcul

B1. Denumire: Notebook Lenovo thinkpad Edge 13 – 6 bucati, plus genti;
 B2. Caracteristici, performante: Prelucrare date;
 B3. Aplicatii ce pot fi efectuate: Windows, Office; Adobe;
 B4. Sursa de finantare: POSDRU 77082
 B5. Valoare estimata: 8 300 lei
 B6. Anul achizitiei: 2012



B1. Denumire: IMPRIMANTA HP OFFICEJET, 2 buc
 B2. Caracteristici, performante: Multifunctional;
 B3. Aplicatii ce pot fi efectuate: Listare, scanare, copiere, fax;
 B4. Sursa de finantare: POSDRU 77082
 B5. Valoare estimata: 1 800 lei;
 B6. Anul achizitiei: 2012



B1. Denumire: Videoproiector BenQ MS 510 cu lampa de rezerva si laser point (6 buc), plus geanta;
 B2. Caracteristici, performante:
 B3. Aplicatii ce pot fi efectuate: Prelegeri;
 B4. Sursa de finantare: POSDRU 77082
 B5. Valoare estimata: 4 000 lei.
 B6. Anul achizitiei: 2012.



B1. Denumire: Miniscaner;
 B2. Caracteristici, performante: Portabil;
 B3. Aplicatii ce pot fi efectuate: Scanare rapida;
 B4. Sursa de finantare: POSDRU 77082;
 B5. Valoare estimata: 280 lei;
 B6. Anul achizitiei: 2012



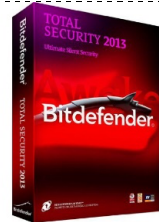
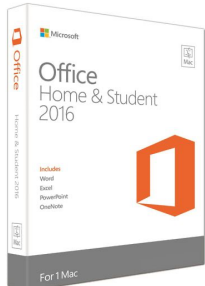
B1. Denumire: SISTEM DESKTOP, cu monitor
 B2. Caracteristici, performante: Prelucrare date
 B3. Aplicatii ce pot fi efectuate: Windows, Office; Adobe
 B4. Sursa de finantare: POSDRU 77082
 B5. Valoare estimata: 3 700 lei
 B6. Anul achizitiei: 2012



B1. Denumire: Memorie externa Corsair (6 buc) 16 GB
 B2. Caracteristici, performante: CMFUSB2.0-16GBGT Flash VoyagerGT
 B3. Aplicatii ce pot fi efectuate: Stocare informatie
 B4. Sursa de finantare: POSDRU 77082



B5. Valoare estimata: 800 lei B6. Anul achizitiei: 2012	
B1. Denumire: Sistem calcul - laptop B2. Caracteristici, performante: Prelucrare date B3. Aplicatii ce pot fi efectuate: Office; Adobe; Matlab; B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 12000 lei B6. Anul achizitiei: 2016	
B1. Denumire: Sistem calcul Lenovo- laptop B2. Caracteristici, performante: Prelucrare date B3. Aplicatii ce pot fi efectuate: Windows; Office; Adobe B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 3500 lei B6. Anul achizitiei: 2016	
B1. Denumire: Sistem calcul Lenovo Ideapad 500- laptop B2. Caracteristici, performante: Prelucrare date B3. Aplicatii ce pot fi efectuate: Windows; Office; Adobe B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 3500 lei B6. Anul achizitiei: 2016	
B1. Denumire: Videoproiector Epson (2 buc), plus geanta; B2. Caracteristici, performante: full HD, 1920x1080 B3. Aplicatii ce pot fi efectuate: Prezentrari B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 3500 lei. B6. Anul achizitiei: 2016.	
B1. Denumire: Imprimantă HP LJ color CP B2. Caracteristici, performante: Multifunctional; B3. Aplicatii ce pot fi efectuate: Listare, scanare, copiere, fax; B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 1 000 lei; B6. Anul achizitiei: 2014	

B1. Denumire: Sistem calcul Asus – laptop (3 buc) B2. Caracteristici, performante: Prelucrare date B3. Aplicatii ce pot fi efectuate: Windows; Office; Adobe; Matlab; C++ B4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013 B5. Valoare estimata: 12600 lei B6. Anul achizitiei: 2013	
C. Softuri	
C1. Denumire: Sistem de operare Microsoft Windows Vista C2. Aplicatii ce pot fi efectuate: Home Basic (7 buc) C3. Numar maxim de utilizatori: 10 C4. Sursa de finantare: POSDRU 77082 C5. Valoare estimata: 2 300 lei C6. Anul achizitiei: 2012	
C1. Denumire: Microsoft Office Home and Student C2. Aplicatii ce pot fi efectuate: 7 buc. C3. Numar maxim de utilizatori: 10 C4. Sursa de finantare: POSDRU 77082; C5. Valoare estimata: 2 300 lei; C6. Anul achizitiei: 2012	
C1. Denumire: Bitdefender, 7 buc.; C2. Aplicatii ce pot fi efectuate: Antivirus C3. Numar maxim de utilizatori: 10 C4. Sursa de finantare: POSDRU 77082 C5. Valoare estimata: 2 300 lei C6. Anul achizitiei: 2012	
C1. Denumire: Office Home and Student for Mac C2. Aplicatii ce pot fi efectuate: Office Word, Excel, Power Point; OneNote. C3. Numar maxim de utilizatori: 1 C4. Sursa de finantare: PN-II-ID-PCE-69/2.9.2013; C5. Valoare estimata: 700 lei; C6. Anul achizitiei: 2016	

Oradea, 31/03/2025

Director centru de cercetare

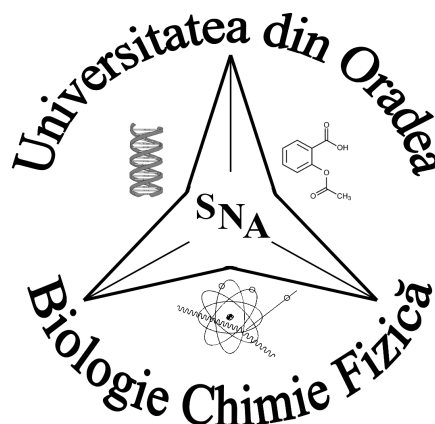
Prof. univ. dr. LOREDANA MARCU



PRESENTATION OF THE CENTER

1. Name of the Center: Center for Research in Applied Natural Sciences (SNA)

2. Center's logo:



3. Brief presentation of the Center

- SNA includes academics, researchers, postgraduate student (PhD and MSc) as well as undergraduate students from three main science fields: biology, chemistry and physics;
- SNA is legally represented by the University of Oradea, according to the internal regulations of the center;
- SNA is administratively represented by the Director;
- SNA is an independent, non-governmental, apolitical entity with professional, scientific and educational profile;
- The headquarters of the SNA is located at the University of Oradea, 1 Universitatii street, Building C, Department of Physics, tel: 40259 408161, fax: 40259 408468. The Director's contact details: tel: 40 730669502; email: loredana@marcunet.com
- UNESCO classifications: 22 (physics), 23 (chemistry), 24 (life sciences), 25 (earth & space sciences), 32 (medical sciences), 33 (technological sciences);

- NACE classifications: 58, 72, 85.

4. The mission of the research and development unit, the directions of research, development and innovation:

The mission of SNA research center is the fundamental and applied scientific research in natural sciences (biology, chemistry and physics) and inter-related disciplines.

5. The research directions of the center are:

5.1. Research directions in biology:

- initiation of plant cell cultures and their subcultivation on various environments;
- removing hyperhydrium from vitro culture;
- analyzing plant reactivity in vitro, under varying environmental conditions;
- identification of optimal acclimation substrates for plants;
- establishing the optimal conditions for the rapid in vitro multiplication of willow and poplar species in order to acclimate and obtain vegetal biomass as a source of energy;
- micropropagation, in vitro preservation and acclimatization of endangered plant species;
- the study of the aquatic organisms (benthos, ihtiofauna) and the environmental factors that influence them;
- soil enzyme studies;
- study of the influence of thermal waters on the biology and ecology of amphibians;
- mapping the fauna of amphibians and reptiles in the country;
- research into the trophic spectrum of amphibians, their hybridism and physiology.

5.2. Research directions in chemistry:

- synthesis of inorganic compounds with complex structure;

- synthesis and identification of organic compounds and tracking reaction mechanisms;
- identification and dosing of organic and inorganic chemical compounds with impact on environment and living organisms, as well as the development of methods for their recovery and removal;
- corrosion, corrosion protection, corrosion and passivation behavior of metal / medium systems, corrosion protection with inhibitors and conversion layers;
- monitoring the chemical composition of geothermal waters and waste water resulting from various technological processes;
- identification and separation of biologically active compounds by high performance chromatographic methods;
- application of modern laser interferometry techniques in the field of food chemistry.

5.3. Research directions in physics:

- theoretical studies in radiotherapy by Monte Carlo simulation of tumor growth, modeling of radiotherapy treatments and study of the effects of treatments on tumor behaviour;
- the study of dosimetric aspects in brachytherapy of prostate cancers;
- molecular and medical biophysical studies: addressing the principle of voltage and patch-clamp techniques, measuring the electrical currents through a single ion channel, confocal imaging, excitation-contraction coupling in the striated muscle;
- spectroscopic investigations of complexes of biological interest, by spectroscopic methods: UV-VIS, FTIR, RAMAN, RES;
- medical imaging studies with PET/CT, IRM;
- study of the properties of superconducting materials with high critical temperature (HTS) in polycrystalline or thin film;
- study of the properties of vitreous oxides;

- the theoretical study of magnetic, optical and semiconductor properties, and dilute magnetic semiconductors;
- charge and spin transport phenomena, spintronics and associated phenomena;
- transport phenomena in quantum-dot, quantum-wire and carbon nanotubes, modeled using numerical methods, in particular the method of numerical renormalization;
- theoretical and numerical modeling of the properties of superconducting systems with high critical transition temperature;
- theoretical and numerical modeling of the electronic structure of highly correlated systems;
- the study of the electronic structure of semiconductor and semi-metallic heterostructures;
- dosimetric studies on radon;
- in-situ study of the oxidation process of metallic alloys under different temperature and pressure conditions;
- methodical and didactic studies in teaching and learning physics; physics and modern educational technologies.

6. Valorisation of research, development, innovation results and their degree of recognition

- Participation in national and international research programmes, collaborations through grants and various projects;
- Publication of scientific articles in ISI journals with high international visibility; presentations of research results at various national / international conferences;
- Publication of books and book chapters in top areas of sciences; development of competitive university courses;
- Organisation of seminars for training of young researchers and specialists;
- Participation of undergraduate and postgraduate students in local research programmes and national / international exchange programmes;

- Development of new products, experimental models, computer simulations for interdisciplinary applications;
- Increase of research results visibility on both national and international levels; European integration through participation in Horizon 2020 projects.

7. Equipment / Computing systems / Software

A. Equipment

A1. Name: BOD determination system
 A2. Characteristics, performance: Shake measurement system that allows simultaneous BOD analysis for 12x510 ml
 A3. Applications that can be performed: Biochemical oxygen consumption measurement
 A4. Source of funding: HURO
 A5. Estimated value: 4.795,08 euro
 A6. Purchase year: 2014



A1. Name: multiparameter HI9829
 A2. Characteristics, performance: The system allows for pH and potentiometric measurements, conductivity and salinity, dissolved oxygen concentration, temperature, calibration and measurement according to GLP
 A3. Applications that can be performed: pH measurement, conductivity, temperature, dissolved oxygen in water
 A4. Source of funding: HURO
 A5. Estimated value: 3.644,36 euro
 A6. Purchase year: 2014



A1. Name: Algae Torch; BBE
 A2. Characteristics, performance: real-time determination of chlorophyll content of cyanobacteria and total chlorophyll of microalgae in rivers and lakes
 A3. Applications that can be performed: determination of aquatic chlorophyll
 A4. Source of funding: HuRo
 A5. Estimated value: 12.577,32 euro
 A6. Purchase year: 2014



A1. Name: Benthic Torch BBE
 A2. Characteristics, performance: simultaneously determine, in real time, the content of cyanobacteria, green algae and diatoms
 A3. Applications that can be performed: determination of phytobenthic algae;
 A4. Source of funding: HuRo
 A5. Estimated value: 15.790,16 euro
 A6. Purchase year: 2014



A1. Name: Research microscope
 A2. Characteristics, performance: Upright microscope working in light transmitted by the "bright field" method
 A3. Applications that can be performed: investigating fixed samples in the light field
 A4. Source of funding: HuRo
 A5. Estimated value: 39.331,56 euro
 A6. Purchase year: 2014



A1. Name: Stereomicroscope
 A2. Characteristics, performance: magnification of about 7x – 110x
 A3. Applications that can be performed: investigating opaque samples
 A4. Source of funding: HuRo
 A5. Estimated value: 12.938,16 euro
 A6. Purchase year: 2014



A1. Name: inverted microscope
 A2. Characteristics, performance: An inverted microscope for field light and phase contrast light studies, directing light information to the lateral / ocular port as follows: 0: 100%, lateral port: ocular% and 100: 0%.
 A3. Applications that can be performed: light field investigations, dark field, UV
 A4. Source of funding: HuRo
 A5. Estimated value: 30.459,36 euro
 A6. Purchase year: 2014



A1. Name: Electronic device - electronarcosis
 - 250W, 300-600V, 15-25 A + electronic aggregate electronarcosis (with battery)
 A2. Characteristics, performance: Output voltages: adjustable in the range 150-300V and 300-600V DC
 A3. Applications that can be performed: scientific fishing
 A4. Source of funding: HuRo
 A5. Estimated value: 8.742,00 euro
 A6. Purchase year: 2014



A1. Name: micromanipulation system for microscope
 A2. Characteristics, performance: Pneumatic injector with syringe capacity of at least 4 ml, volume injected at least 450 ml / rotation. Joystick Hydraulic Micromanipulator (drop handle), three-way shift control, adjustable, graduated, symmetrical design for both sides of the microscope. Maximum stroke on each direction for fine movement of at least 10 mm, resolution better than or equal to 2.5 μm / gradation.
 A3. Applications that can be performed: cellular interventions, fluid introduction, solid particles, drugs, etc.
 A4. Source of funding: HuRo
 A5. Estimated value: 33.435,36 Euro
 A6. Purchase year: 2014

See Inverted microscope

A1. Name: Distiller / bidistilator (for water)
 A2. Characteristics, performance: Distilled flow 4 l/h – bi – distilled pH 5,6 - 6,0 Pirogenitis without conductivity < 1 $\mu\text{S}/\text{cm}$; Heating power 6kW;
 Pressure (min-max) 70 – 560 kPa
 Minimum flow of raw water 2 l/min
 Dimensions (mm) 750 x 490 x 380
 Weight: 29 kg
 A3. Applications that can be performed: Anything needs distilled / bidistilled water
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 6435 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Analytical balance
 A2. Characteristics, performance: Max. weight capacity: 320 g
 Reading: 0,1 mg
 A3. Applications that can be performed: Anything needs precision weighing
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 1800 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Portable multiparameter
 A2. Characteristics, performance: pH, conductivity, oxygenmetre
 Memory capacity: 500 registrations
 Reading: separate sensor for each parameter
 A3. Applications that can be performed:
 Precise determination of pH, conductivity and oxygen in aqueous media
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 3715 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Spectrophotometer UV-VIS
 A2. Characteristics, performance: Spectral range: 190 – 1100 nm
 Scanning speed: selectable
 Measuring modes - absorbance and transmittance, quantitative analysis (concentration)
 A3. Applications that can be performed:
 precise determination of absorption, extinction, concentration of aqueous liquid media
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 6736 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Light intensity transducer
 A2. Characteristics, performance: Type of measured light radiation: Photosynthetic active radiation (Wavelengths between 400 and 700 nm) expressed in $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$.
 Signal sensitivity: Between 5HA and 10 HA per $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$
 Signal linearity:
 Deviation of up to 1% to 1a 10000 $\text{Hmol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$
 A3. Applications that can be performed:
 Determining the intensity of active photosynthetic light (PAR)
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 2775 euro w/o TVA
 A6. Purchase year: 2018

A1. Name: Magnetic stirrer with heating
 A2. Characteristics, performance: Number of stirring positions: max. stirring capacity (H₂O) [l]: 20 [W]: 9 Stirring directions: right
 A3. Applications that can be performed: homogenizing / obtaining solutions
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 1450 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Ultrasonic bath
 A2. Characteristics, performance: Voltage / Frequency: 100-120/220-240V / 50/60 Hz. The ultrasonic frequency: 37 kHz S300: 300 W; Heating power: 1200 W
 A3. Applications that can be performed: hot storage of solutions; washing of various laboratory objects, which can not be washed by classic methods (eg pipettes); plant extracts; etc..
 A4. Source of funding: Interreg V-A Romania-Hungary
 A5. Estimated value: 2466 euro w/o TVA
 A6. Purchase year: 2018



A1. Name: Vertical laminar hood V with gas valve, seat, holder, protective equipment (glasses, masks, gloves), spare HEPA filter, prefilter, UV lamp, disinfectant substances and handkerchiefs;
 A2. Characteristics, performance: Provides vertical flow of sterile air
 A3. Applications that can be performed: Plant cell and tissue inoculations
 A4. Source of funding: POSDRU 77082
 A5. Estimated value: 11000 lei
 A6. Purchase year: 2012



A1. Name: Bactericidal light 30 W, mobile
 A2. Characteristics, performance: Mobility
 A3. Applications that can be performed: Sterilization of air inoculation chamber
 A4. Source of funding: POSDRU 77082
 A5. Estimated value: 800 lei
 A6. Purchase year: 2011

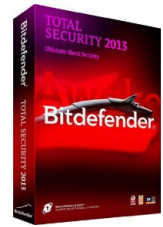
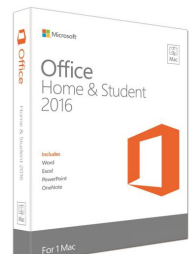


A1. Name: Vacuum pump, Milipore filters A2. Characteristics, performance: Performance filtering A3. Applications that can be performed: Sterilization by filtration of culture media A4. Source of funding: POSDRU 77082 A5. Estimated value: 1,800 lei A6. Purchase year: 2011	
A1. Name: Technical balance A2. Characteristics, performance: Standard A3. Applications that can be performed: weighing A4. Source of funding: POSDRU 77089 A5. Estimated value: 1 000 lei A6. Purchase year: 2011	
A1. Name: Ultrasonic bath, filter stand, stainless steel basket; A2. Characteristics, performance: ultrasonication A3. Applications that can be performed: Sterilization through US A4. Source of funding: POSDRU 77082 A5. Estimated value: 3 800 lei A6. Purchase year: 2011	
A1. Name: Image processing support; camera adapter; macro, micro objectives; card, flash A2. Characteristics, performance: Making pictures macro, micro A3. Applications that can be performed: Database A4. Source of funding: POSDRU 77082 A5. Estimated value: 7,000 lei A6. Purchase year: 2011	
A1. Name: Vacuum pump A2. Characteristics, performance: vacuum A3. Applications that can be performed: Medium culture sterilization A4. Source of funding: POSDRU 77082 A5. Estimated value: 1 800 lei A6. Purchase year: 2011	
B. Computing systems	
B1. Name: Lenovo ThinkPad Edge 13 notebook - 6 pieces, plus bags B2. Characteristics, performance: Data processing B3. Applications that can be performed: Windows, Office; Adobe B4. Source of funding: POSDRU 77082 B5. Estimated value: 8 300 lei	

B6. Purchase year: 2012 B1. Name: HP OFFICEJET PRINTER, 2 pcs B2. Characteristics, performance: Multifunctional B3. Applications that can be performed: Printing, scanning, copying, faxing B4. Source of funding: POSDRU 77082 B5. Estimated value: 1,800 lei B6. Purchase year: 2012	
B1. Name: BenQ MS 510 Projector with Backlight and Laser Point (6pcs) plus bag; B2. Characteristics, performance; B3. Applications that can be performed: lectures B4. Source of funding: POSDRU 77082 B5. Estimated value: 4 000 lei B6. Purchase year: 2012	
B1. Name: Miniscaner B2. Characteristics, performance: Portable B3. Applications that can be performed: Fast scanning B4. Source of funding: POSDRU 77082 B5. Estimated value: 280 lei B6. Purchase year: 2012	
B1. Name: DESKTOP SYSTEM with monitor B2. Characteristics, performance: Data processing B3. Applications that can be performed: Windows, Office; Adobe B4. Source of funding: POSDRU 77082 B5. Estimated value: 3 700 lei B6. Purchase year: 2012	
B1. Name: Corsair External Memory (6 pcs) 16 GB B2. Characteristics, performance: CMFUSB2.0-16GBGT Flash Voyager GT B3. Applications that can be performed: Information storage B4. Source of funding: POSDRU 77082 B5. Estimated value: 800 lei B6. Purchase year: 2012	
B1. Name: Computing system- laptop B2. Characteristics, performance: data acquisition and processing B3. Applications that can be performed: Office; Adobe; Matlab; B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 12000 lei	

B6. Purchase year: 2016 B1. Name: Lenovo- laptop B2. Characteristics, performance: data acquisition and processing B3. Applications that can be performed: Windows, Office; Adobe; B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 3500 lei B6. Purchase year: 2016	
B1. Name: Lenovo Ideapad 500- laptop B2. Characteristics, performance: data acquisition and processing B3. Applications that can be performed: Windows, Office; Adobe B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 3500 lei B6. Purchase year: 2016	
B1. Name: Videoprojector Epson (2), plus bag; B2. Characteristics, performance: full HD, 1920x1080 B3. Applications that can be performed: presentations; lectures B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 3500 lei. B6. Purchase year: 2016.	
B1. Name: Printer HP LJ color CP B2. Characteristics, performance: Multifunctional; B3. Applications that can be performed: printing, scanning, copying, fax; B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 1 000 lei; B6. Purchase year: 2014	
B1. Name: Asus – laptop (3) B2. Characteristics, performance: data acquisition and processing B3. Applications that can be performed: Windows; Office; Adobe; Matlab; C++ B4. Source of funding: PN-II-ID-PCE-69/2.9.2013 B5. Estimated value: 12600 lei B6. Purchase year: 2013	

C. Software

C1. Name: Microsoft Windows Vista Home Basic (7 pcs) C2. Applications that can be performed: C3. Maximum number of users: 10 C4. Source of funding: POSDRU 77082 C5. Estimated value: 2 300 lei C6. Purchase year: 2012	
C1. Name: Microsoft Office Home and Student, 7 pcs C2. Applications that can be performed: C3. Maximum number of users: 10 C4. Source of funding: POSDRU 77082 C5. Estimated value: 2 300 lei C6. Purchase year: 2012	
C1. Name: Bitdefender, 7 pcs C2. Applications that can be performed: antivirus; C3. Maximum number of users: 10 C4. Source of funding: POSDRU 77082 C5. Estimated value: 2 300 lei C6. Purchase year: 2012	
C1. Name: Office Home and Student for Mac C2. Applications that can be performed: Office Word, Excel, Power Point; OneNote. C3. Maximum number of users: 1 C4. Source of funding: PN-II-ID-PCE-69/2.9.2013; C5. Estimated value: 700 lei C6. Purchase year: 2016	

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