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Research infrastructure of the "Coriolan Drăgulescu" Institute of Chemistry (ICCD)

EERTIS webpage: https://eertis.eu/erio-2300-000a-4837
ICCD webpage: https://acad-icht.tm.edu.ro/wp/?page_id=145

No.	*Equipment Name*	*Quant*	*Field of Use*	*Services*	*Technical details*	*Manufacturer*	*Year of Purchase*
Infrastructure related to Research Program 1 (P1) **P1: Cheminformatics and other computational chemistry methods.**							
1	GAUSS visualization software	1	Computational chemistry	Visualization of data resulting from theoretical	The most advanced and powerful graphical interface available for Gaussian software.	Gaussian, Inc.	2013
2	Software GAUSSIAN 09	1	Computational chemistry	Advanced theoretical calculations	Predicts the energies, molecular structures, vibrational frequencies and molecular properties of molecules and reactions in a wide variety of chemical environments	Gaussian, Inc.	2010
3	IBM high-performance computing system	1	Computational chemistry	Advanced theoretical calculations	IBM BladeCenter Type 8677 equipped with 5 Blade HS22 servers. Each of the 5 Blade HS22 servers is equipped with two Intel Xeon X5570 processors, 16 GB RAM and 2 hard disks configured in RAID 0 for maximum performance.	IBM / Lenovo	2017
4	Cluster IBM	1	Computational chemistry	Advanced theoretical calculations	IBM Server Model: 7947-96G/ X-3650M2; Processor 2x Xenon Quad-Core X5570 - 3.0 GHz; Blade Centers: HS22, Xeon 4C E5620 Intel Xeon 4C Model E5620; 2GB (1*2GB, 2R*8. 1.5V) PC3-10600; IBM 146GB 2.5 in SFF Slim-HS 10K; Software: Gaussian, Schrödinger, OpenEye (academic license), Gamess.	IBM	2010
5	Software SIMCA P + v. 12.0	1	Computational chemistry	Statistical calculations	Statistical calculations using the partial least squares (PLS) method, principal component analysis (PCA) and discriminant analysis (DA).	Umetrics AB, Malmö	2008
6	Software Statistica v. 7.1	1	Computational chemistry	Statistical data analysis	A range of data analysis, data management, data visualization and data mining procedures. Its techniques include the widest selection of predictive modeling, clustering, classification and exploration techniques in a single software platform.	StatSoft, Dell Software	2006

7	Open-access databases: DrugCentral	1	Online databases with information on approved drugs	Provides a unified overview of drug substances, including chemical structure, biological activity, pharmacological and clinical data.	Integrates data from major public sources such as FDA, PubChem, IUPHAR, DrugBank and PDB.	University of New Mexico (UNM) Health Sciences Center	-
8	Software MobyDigs Professional v.1.0	1	Computational chemistry	Calculation of mathematical models	MobyDigs is software for calculating regression models using genetic algorithms for variable selection in order to obtain an optimal subset of predictive models.	Talete srl (the Milano Chemometrics and QSAR Research Group)	2006
9	Dragon Professional 5.5 - 2007 software	1	Computational chemistry	Calculation of molecular descriptors	Dragon calculates 5,270 molecular descriptors, covering most theoretical approaches. Descriptor types: constitutional, topological, 2D autocorrelations, geometrical, WHIM, GETAWAY, RDF, functional groups, properties, binary fingerprints and 2D frequency.	Talete srl	2008
10	Software Schrödinger	1	Computational chemistry	Software package intended for molecular modeling	Provides general molecular modeling programs, small-molecule drug discovery, complete protein modeling, materials science, and a complete set of tools for data visualization, analysis, compound registration and	Schrödinger	2020
11	Software ChemAxon	1	Computational chemistry	Software package intended for the drug development process	Provides a comprehensive suite of cheminformatics and bioinformatics software tools used in research for drug discovery.	ChemAxon Ltd.	2021
12	SuperServer 1029GQ-TRT	1	Computational chemistry	Advanced theoretical calculations	GPU: NVIDIA TeslaV100S 32GB CoWoS HBM2 PCIe3.0 - Passive cooling; (GPU-NVTV100S-32); Processor: 2x Intel CLX 5218R (P4X-CLX5218R-SRGZ7); 128GB RAM;	Supermicro	2020
13	AMD Ryzen 9 PC system	1	Computational chemistry	Advanced theoretical calculations	16Core/32T 5950 with high performance for complex tasks	AMD (Advanced Micro Devices)	2021
14	Server GPU Supermicro	1	Computational chemistry	Advanced theoretical calculations	Computing system composed of two AMD EPYC 7532 “Rome” processors and 4×32 GB DDR4 1.2V 3200 ECC REG memory, 2 x Micron 5300 PRO 1.92TB SATA 2.5", 920W redundant PSU	NVIDIA	2022
15	Super Server GPU Supermicro (Tesla)	1	Computational chemistry	Advanced theoretical calculations	Computing system composed of NVIDIA Tesla V100S 32GB CoWoS HBM2 PCIe3.0--Passive Cooling; (GPU-NVTV100S-32); Processor: 2x Intel CLX 5218R (P4X-CLX5218R-SRGZ7); 4096-bit memory bus, GPU frequency 1245 MHz, 128GB RAM; SSD and NVMe based storage solution. This superserver is part of an infrastructure dedicated to performing resource-intensive advanced theoretical calculations, such as virtual screening experiments, molecular dynamics, big-data mining, electronic	NVIDIA	2022

Infrastructure related to Research Program 2 (P2) P2: Multifunctional organic and polymeric compounds – with directed properties and applications in environmental protection and sustainable development.							
16	Ball mill (RETSCH MM 400)	2	Sinteze alternative, realizate conform principiilor chimiei verzi	Synthesis of functional materials by the mechanochemical method, as well as for grinding and mixing	Powerful grinding by impact and friction at a frequency of up to 30 Hz; preparation of up to 20 samples per run; 3 different grinding methods: dry, wet, cryogenic; Suitable for research applications in the field of mechanochemistry or for biological cell disruption by bead beating	Retsch GmbH	2024
17	Universal Oven (Memmert UN30)	2	General laboratory equipment	Solvotermale / hidrotermale Reactions	Interior volume: 32 liters; Inner chamber dimensions (W × H × D): 400 × 320 × 250 mm; Temperature range: from ~ +20 °C to +300 °C; Temperature setting resolution: up to 99.9 °C → 0.1 °C; from 100 °C upward → 0.5 °C; Temperature sensor: Pt100 (DIN class A), 4-wire; Ventilation type: natural convection	Memmert	2018
18	pH meter (HI2221)	1	Equipment for analytical chemistry	Determination of pH	HANNA HI2221 is a pH meter that measures pH from -2.00 to 16.00, in the mV range ±699.9 or ±2000, and temperature from 20.0 to 120.0°C. Accuracy is ±0.01 for pH and ±0.2°C for temperature.	Hanna Instruments	2012
19	Conductivity meter (Oakton CON 510)	1	Equipment for analytical chemistry	Determination of conductivity, pH, TDS and temperature	pH range: -2.00 to 16.00 pH, pH accuracy: ±0.01 pH mVR range: -600 to +600 mV, Conductivity range: 0 to 19.99 µS; 0 to 199.9 µS; 0 to 1999 µS; 0 to 19.99 mS; 0 to	Oakton	2008
20	Limiting oxygen index testing equipment (LOI 340AJH0038)	1	Chemistry and materials science	Detection of the relative flammability of polymeric materials.	LOI combustion chamber; flexible and easy-to-handle tester; ensures uniform combustion; ensures accuracy in the preparation of the carrier gas; equipped with two high-precision flowmeters Â ±0.5% and two gas pressure gauges	Dynisco	2008
21	Digital Multimeters (Gw Instek GDM-8145)	1	Chemistry and materials science	Measurement of AC/DC voltage, AC/DC current, resistance and diode testing	Large 0.5" (0.5") red LED display; high resolution 10 µV, 10 nA and 10 mΩ; all ranges with protection circuit; 0.03% DCV accuracy; automatic zero circuit; high current range 20A; high voltage range 1000V AC or AC + DC True R.M.S.	GW Instek	2008
22	Elcometer 456 coating thickness gauge with integrated probe	1	Chemistry and materials science	Measurement and monitoring of coating uniformity on surfaces	Working temperature: -10 to 50°C; thickness range: up to 30 mm (1200 mils); accuracy: ±1% of full scale; precise measurements on smooth, rough, thin and curved surfaces; repeatable and reproducible measurements, without temperature influence; increased reading resolution on thin	Elcometer	2012
23	Conductivity meter (Mettler Toledo FiveEasyPlus™)	1	Equipment for analytical chemistry	Determination of conductivity	It is equipped with LE740 (0.01–500 uS) and LE703 (0.01-200 mS) electrodes.	Mettler Toledo	2016
24	pH meter (Mettler Toledo FiveEasyPlus™)	1	Equipment for analytical chemistry	Determination of pH	Equipped with an LE422 pH electrode, with gel electrolyte filling, specially designed for measurements in small or narrow-neck vessels or test tubes.	Mettler Toledo	2016

25	Ddouble-beam spectrophotometer (Cecil Aquarius CE 7200)	1	Spectrometrie	Qualitative and quantitative analysis of chemical substances, kinetic measurements	Wavelength range from 190 to 900 nm; monochromator: modified Czerny-Turner; detector: two silicon diodes; self-testing and calibration: automatic, at startup; digital display; photometric accuracy: ±0.004A at 1A; scanning speed: 1-4000 nm/min; memory: 30 methods;	Cecil Instruments	2004
26	Glove box (EQ-VGB-2Y)	1	Chemistry and materials science	Creates a controlled environment isolated from ambient air for handling materials sensitive to oxygen, humidity or contamination.	Airtight chamber dimensions: 230 mm × 230 mm × 230 mm; 2 solenoid valves; pressure control range in the main tank: 101 KPa - 95 KPa (system default), two solenoid control pressures; pressure suitable for the operating environment: 98 KPa - 101 KPa; maximum pressure in the airtight chamber: 10 KPa	MTI Corporation	2011
27	Platform orbital shaker, heating module and tall hood (UNIMAX 1010)	1	General-purpose laboratory equipment	Mixing of samples	Maximum load: 5 kg; shaking orbit: 10 mm; motion type: rotation; continuously adjustable speed on the digital display from 30 to 500 rpm; digital timer 0-999 minutes/continuous; analog control of vibration frequency; rubber plate to prevent slipping; digital display; incubator 1000; protection rating: IP	Heidolph	2014
28	UV/Vis Spectrophotometer (V-730)	1	Spectrometrie	Qualitative and quantitative analysis of chemical substances	Wavelength range: 190-1100 nm, variable spectrum scanning speed between 10 and 8000 nm/min. Wavelength accuracy: ±0.2 nm. Light sources: deuterium lamp and tungsten-halogen lamp. Baseline stability: ±0.0004 AU/hour.	Jasco	2016
29	Potentiostat with electrochemical impedance module (Autolab PGSTAT302N)	1	Electrochimie	Investigation of electrochemical reaction mechanisms; electrochemical impedance spectroscopy	Maximum output current: ±2 A; maximum output voltage: ±30 V; operational current integrator module specifications: 16-bit data acquisition; potential range ±10 V; compliance voltage 30 V; electrometer input impedance > 1Tohm; scanning speed 250 V/s (10kV/s with SCANGEN); minimum and maximum measurement range from 10 nA to 1 A	EcoChemie, The Netherlands	2007
30	Speed Centrifuge (DLAB DM0412)	1	General laboratory equipment	Separation by centrifugation	Speed range: 300-4500 rpm, increment: 100 rpm; maximum RCF: 2490×g; rotor type: A12-10P, A6-50P; acceleration/braking time [sec]: A12-10P: 20s↑13s↓ A6-50P: 20s↑20 s /90 s	DLAB Scientific Co., Ltd.	2020
31	Spectrometer (Jasco FT/IR-4200)	1	Spectrometrie	Qualitative and quantitative analysis of chemical substances	Can be used to measure both solid and gaseous samples. Measurement range: 7,800÷350 cm-1; light source: high-intensity ceramic, halogen lamp; detector: DLATGS; accessories: ATR (MIRacle) and ATR (HATR), mono- or multi-reflection.	Jasco	2007
32	Titration system (EasyPlus Easy KFV)	1	Equipment for analytical chemistry	Determination of water content by the volumetric Karl Fischer method	Application type: potentiometric Burette: EasyPlus 20 ml burette; measurement type: potentiometric, acid/base; number of titration methods: 1; sensor: EG11-BNC aqueous pH sensor	Mettler Toledo	2024
33	Elma S70/H ultrasonic bath	1	General-purpose laboratory equipment	Improvement of the dissolution of compounds with low solubility. Degassing of solutions.	Ultrasonic bath with a power of 37 W, equipped with dedicated degassing functions, digital timing and adjustable heating between 30 and 80 °C,	Elma Schmidbauer GmbH	2015

34	Ultrasonic homogenizer (Hielscher UP200W)	1	General-purpose laboratory equipment	Performs homogenization, emulsification, dispersion, disintegration and degassing of samples	It consists of a separate UP200St-T transducer and a UP200St-G generator. Equipped with S26D14 and S26D2D sonotrodes; integrated LEDs for sample illumination, connectable temperature sensor, integrated SD card for automatic data recording.	Hielscher Ultrasonics GmbH	2023
35	Digital rotavapor (Heidolph Laborota 4000 Efficient HB)	1	General laboratory equipment	Removal of solvents and purification of substances	Equipped with VACUUBRAND MZ 1C vacuum pump; rotations: 0-270 rpm; temperature range: 0-180°C	Heidolph	2000
36	Double-distilled water bidistiller (BI-HYDRO 4)	1	General laboratory equipment	Obtaining pure water.	The produced distilled water has a conductivity of 0.5 µs/cm at 20 °C. It allows distilled water to be obtained at a flow rate of 4 L/h.	Pobel	2022
Infrastructure related to Research Program 3 **P3: Chemistry and applications of tetrapyrrolic compounds from the porphyrin class**							
37	Forced air drying oven (BIOBASE BOV-T25F)	1	General laboratory equipment	Heating and/or drying of chemical substances	Stainless steel inner chamber; PID control with LED display; overheating protection; capacity: 25L; temperature range: 50~200°C	Biobase	2020
38	Small Laboratory Centrifuge (EBA 200 - Hettich)	1	General laboratory equipment	Separation of the components of a mixture by centrifugation.	Features an 8-position fixed-angle rotor to hold tubes with a capacity of up to 15 ml; maximum RCF: 3461; maximum RPM: 6,000 min-1	Hettich	2020
39	HPLC System (Jasco LC Net II / ADC)	1	Chemistry and Materials Science	Separation of organic compounds, valorization of renewable biomass	Detector: Jasco MD-1510; pump: Jasco PU-1580; equipped with polar or nonpolar columns. UV-VIS detector MD 1510	Jasco	2012
40	Digital magnetic stirrer with heating (IKA RH)	1	Hotplates with magnetic stirring	Mixing and heating of chemical compounds	Maximum mixing quantity (H_2O) 15 l; rated motor power 2 W; speed range 100-2000 rpm; heating power 600 W; temperature setting range 50-320 °C; heating rate of the heating plate 6 K/min.	IKA	2017
41	UV-Vis spectrophotometer (UV-Vis Jasco V-650)	1	Spectroscopy	Qualitative and quantitative analysis of chemical substances	Double-beam spectrophotometer, with photomultiplier tube (PMT) detector. Allows the use of solid accessories for sample handling, such as integrating spheres, to collect diffuse light transmitted or reflected by the sample.	Jasco	2009
42	Heated magnetic stirrer (MR Hei-Standard)	2	Hotplates with magnetic stirring	Mixing and heating of chemical compounds	Rotation speed range 100-1,400 rpm; maximum mixing capacity (H_2O) 20 l; hotplate temperature 20-300 °C; heating power 800 W.	Heidolph Instruments	2020
43	UV Flood cure system (SUNRAY 400 SM)	1	Chemistry and materials science	Curing or polymerization of materials	Compact UV polymerization system equipped with an hour counter on the front panel that tracks lamp age. Lamp power: 400W; input voltage: 100–120/200–240 VAC±10%;	Uvitron International, Inc.	2013
44	Stereo microscop (ZEISS Stemi 508)	1	Analytical chemistry	Optical analysis of samples	Magnification range: 6.3×–50×; free working distance: 92 mm; maximum resolution: test slide: 225 Lp/mm; resolving power (Rayleigh criterion) g = 4.4 µm; smallest object structure g/2 = 2.2 µm; maximum object field diameter: 36.8 mm; 10 positions of zoom stops that can be activated as desired: (final stop 0.63×)	Zeiss	2016

45	Viscometer (IKA EURO-ST B)	1	General laboratory equipment	Measurement of liquid viscosity	Viscosity range 1–6,000,000 mPas, speed 0.01-200 rpm, accuracy ±1%, repeatability ±0.2%.	IKA	1995
46	Analytical balance (Sartorius CP225D)	1	Equipment for analytical chemistry	Weighing of samples	Capacity resolution: 210 g × 0.01 mg; reproducibility: +-0.02/0.05/0.1 mg; linearity: 0.03/0.2 mg; calibration weight: internal or external 200 g	Sartorius	2007
47	Vacuum diaphragm pump (VACUUBRAND MZ 1C)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Maximum vacuum: 15 torr (with gas ballast), 9 torr (without gas ballast); maximum temperature: 40°C; flow rate: 0.4/0.5 CFM; power: 0.08 HP; motor speed: 150 to 1800 rpm; maximum pressure: 17.5 psi	Vacuubrand	2020
Infrastructure related to Research Program 4 (P4) **P4: Obtaining multifunctional compounds relevant to nanostructured materials science, biochemistry or environmental protection**							
48	Irradiation system (Oriel TLS 260 - 300X)	1	General laboratory equipment	Controlled photoirradiation for activating and modifying the chemical or physical properties of materials.	TLS13 0B-250Q lamp; adjustment range - white light or monochromatic light from 350-1800 nm with a resolution of up to 0.7 nm; OPS power supply with light-intensity control; Cornerstone™ 130 monochromator	Oriel	2016
49	Differential scanning calorimeter (DSC 823e)	1	Equipment for analytical chemistry	Determination of thermal processes: melting, crystallization, solid-solid transitions, polymorphism, glass transitions, heat-capacity measurements	Temperature range: room temperature to 700°C; temperature accuracy: +0.2°C; temperature reproducibility: +0.1°C; heating rate: 0…100°C, in steps of min. 0.01°C; cooling rate: max. 25°C (with intracooler); resolution: 0.04 µW	Mettler	2005
50	UV/Vis Spectrophotometer (Agilent Cary 60 UV-Vis)	1	Spectroscopy	Qualitative and quantitative analysis of chemical substances	Comprises a double-beam Czerny-Turner monochromator, wavelength range 190–1100 nm, fixed spectral bandwidth of 1.5 nm, full-spectrum pulsed xenon lamp, single source, dual silicon diode detectors, quartz-coated optics.	Agilent Technologies	2014
51	Atomic absorption spectrometer with Digesdahl digestion apparatus	1	Spectroscopy	Quantitative determination of free metal ions. Digesdahl: Performs acid digestion of substances to bring metal ions into solution for	Automatic control of wavelength, flame and slit; deuterium lamp; measurable metal ion concentrations: Ag, Ca, Cu, Co, Cr, Fe, K, Li, Na, Mg, Ni, Mn, Pb, Pd, Pt, Zn from complexes, plastics, alloys, fats and salts.	GBC Scientific Equipment PTY Ltd	2004
52	Spectrometer (FTIR Cary 630)	1	Infrared spectroscopy	Records the quantitative and qualitative infrared spectrum of a solid or liquid.	Spectral range (KBr optics): 7000-350 cm-1; optical resolution: dehydrated, KBr beam splitter, KBr windows; interferometer: permanently aligned Michelson with 45° incidence (resistant to shocks, vibrations and motion)	Agilent Technologies	2015
53	FiveEasyPlus Conductivity Meter (Mettler Toledo FiveEasyPlus™)	1	Equipment for analytical chemistry	Determination of conductivity	It is equipped with LE740 (0.01–500 uS) and LE703 (0.01-200 mS) electrodes.	Mettler Toledo	2019
54	FiveEasyPlus™ pH meter (Mettler Toledo)	1	Equipment for analytical chemistry	Determination of pH	Equipped with an LE422 pH electrode, with gel electrolyte filling, specially designed for measurements in small or narrow-neck vessels or test tubes.	Mettler Toledo	2018

55	Circulation water bat (WCR-P8)	1	General laboratory equipment	Allows maintaining a constant cooling-fluid temperature for external	Temperature range: -20 °C to +150 °C; cooling capacity: approx. 300 W at 0 °C; temperature accuracy: approx. ±0.1 °C; bath capacity: 8 L; pump speed (flow rate): 10-15	Witeg Labortechnik GmbH	2015
56	Ultrasonic bath (Elmasonic S70H)	1	General-purpose laboratory equipment	Improvement of the dissolution of compounds with low solubility. Degassing of solutions.	Tank volume: 6.8 liters; ultrasound frequency: 37 kHz (kilohertz); effective ultrasound power: 160 W; includes integrated heater (from 30°C to 80°C).	Elma Schmidbauer GmbH	2014
57	Ultrasonic processor (VCX 750)	1	General-purpose laboratory equipment	Improvement of the dissolution of compounds with low solubility. Degassing of solutions.	Output power: 750 W (Watt), much higher power than the S70H bath. Ultrasound frequency: 20 kHz (low frequency, very powerful); amplitude control (delivered power) from 1 to 100%. Operating modes: pulsed (pulsing) and continuous.	Sonics & Materials, Inc	2021
58	Analytical balance (G&G JJ1023BF)	1	Equipment for analytical chemistry	Weighing of samples	Maximum weighing capacity: 100 g; accuracy 0.001 g; measurement units: g, oz, ct, kg, lb, etc. External calibration; weighing pan: stainless steel, diameter 90 mm	G&G Instrumentation	2020
59	Analytical balance (Sartorius CP225D)	1	Equipment for analytical chemistry	Weighing of samples	Analytical balance with dual range; maximum capacity 1: 120 g; maximum capacity 2: 220 g; repeatability (std. dev.) 0.1 mg (at 120 g); 1.0 mg (at 220 g); linearity: ±0.2 mg (at 120 g); ±1.0 mg (at 220 g); automatic internal calibration	Sartorius	2007
60	LE225D analytical balance	1	Equipment for analytical chemistry	Weighing of samples	Analytical balance with dual range; maximum capacity 1: 120 g; maximum capacity 2: 220 g; repeatability (std. dev.) 0.1 mg (at 120 g); 1.0 mg (at 220 g); linearity: ±0.2 mg (at 120 g); ±1.0 mg (at 220 g); external calibration	Mettler Toledo	2007
61	Minireactors (Standard HME-R)	1	General laboratory equipment	Provides precise control of temperature, stirring and pressure	Maximum working volume 1000 mL, temperature range +30 °C to 250 °C; stirring speed 100 rpm to 700 rpm, pressure control from 5 mbar to 0.7 bar; construction materials: borosilicate glass 3.3 (reactor), PTFE and Hastelloy® (parts in contact with the sample)	Scharlab	2021
62	UV-Vis lamp (VL-215)	2	General-purpose laboratory equipment	Identification of chemical compounds at a precise wavelength.	Wavelengths: 254 nm and 365 nm; power: minimum 2 × 8 W; filter operating life: minimum 3000 hours for 254 nm; filter for minimizing white-light emission; filter dimensions: minimum 140 mm × 45 mm;	Vilber	2014
63	Hot plate stirrer (AREX)	8	General laboratory equipment	Mixing of samples	Temperature range: up to 400 °C (on hotplate); stirring speed range 30 rpm to 1700 rpm; temperature control accuracy: ±0.5 °C; maximum stirring capacity: 20 L H_2O; dimensions (L × H × D) 165 × 115 × 280 mm	VELP Scientifica	2021
64	Oven (WISD 23 Witeg)	1	General laboratory equipment	Heating and/or drying of chemical substances	Forced-convection oven; interior volume 23 L; temperature range: ambient +5 °C to 250 °C; display: digital LCD with backlight; controller: digital "Fuzzy Control" system, with rotary and push button; temperature accuracy: ±0.3 °C at 100	Witeg Labortechnik GmbH	2009

65	Oven (ESAC- 50)	1	General laboratory equipment	Maintaining biological and biochemical samples at constant temperature, performing medical analyses, drying work, hot-air	Interior volume: 50 liters; temperature range approx. +5 °C above ambient temperature to 250 °C; temperature control: microprocessor with digital thermoregulator and LED or LCD display; display accuracy (resolution): 0.1 °C	Esac	2015
66	Vacuum drying oven (Binder VD 23 VD023UL)	1	General laboratory equipment	Heating and/or drying of chemical substances	Temperature range: +9 °C above ambient temperature to 220 °C; heating time: 80 minutes to reach 100 °C; permitted final vacuum: 0.01 mbar; leakage rate: 0.01 bar/h.	Binder	2007
67	Programmable drying oven (Heraeus Function Line UT6P)	1	General laboratory equipment	Heating and/or drying of chemical substances	Programmable drying oven with forced air circulation; interior volume: approximately 57-64 liters Temperature range: from ambient temperature +10°C up to a maximum of 250°C	Heraeus	2009
68	Chamber furnaces (Nabertherm N 11/HR, LTH 08/16)	1	General laboratory equipment	Performs firings of the highest quality for ceramic, glass, porcelain and stoneware projects	Capacity 8 liters, maximum temperature 1600°C	Nabertherm	2007
69	Universal oven (Memmert UNE 200)	1	General laboratory equipment	Reactii solvotermale/ hidrotermale	Temperature range: +30°C to +250°C; capacity: 32 liters; temperature deviation: ±0.2°C at 105°C	Memmert	2009
70	Cylinder Furnaces (Sirio Dental Fire Light SR 730M)	1	General laboratory equipment	Preheating or heat treatment of gypsum, alloy and ceramic "cylinders".	Maximum temperature: 1100 °C; absorbed power: ~2000 W	Sirio Dental s.r.l.	2006
71	Rotary evaporator (Hei-VAP Core HL, G3B XL)	1	General laboratory equipment	Removal of solvents and purification of substances	Rotation speed range: 10-280 rpm; bath heating power: 1,300 W; bath temperature range: 20-210 °C; condensation surface in the "XL" version: 2,200 cm^2	Heidolph	2020
72	Rotary evaporator with heating bath (IKA HB 10)	1	General laboratory equipment	Removal of solvents and purification of substances	Heating power: 1,300 W; temperature range: from ambient temperature to +180 °C; temperature control accuracy: ±1 K (with water, 3 L / 90 °C); maximum bath volume: 3 liters.	IKA	2016
73	Recirculating chillers (RC-10)	1	General laboratory equipment	Allows maintaining a constant cooling-fluid temperature for external cooling circuits	Adjustable temperature range: from -10 °C to +40 °C; cooling capacity at +15 °C: ~500 W. Maximum flow rate: ~8 L/min (at low return pressure). Refrigerant: R134a.	VWR International	2020
74	Vacuum pump (RZ 2.5)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Maximum pumping speed: ~2.3 m^3/h (50 Hz); absolute ultimate vacuum without gas ballast: ~4 $\times 10^{-4}$ mbar. General absolute ultimate vacuum: ~2 $\times 10^{-3}$ mbar / 1.5×10^{-3} torr. Ultimate vacuum with gas ballast activated: ~1×10^{-2} mbar. Number of stages: 2	Vacuubrand	2020
75	Vacuum pump (PC 511 NT)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Maximum pumping speed: 2.0 m^3/h (50 Hz) / 2.3 m^3/h (60 Hz); equivalent speed: ~1.2 cfm (50 Hz) / ~1.4 cfm (60 Hz); ultimate vacuum (absolute pressure): 7 mbar (~5 torr) without gas ballast; ultimate vacuum with gas ballast activated: 12 mbar (~9 torr); number of heads / stages: 2	Vacuubrand	2016

76	Vacuum pump (PC 610)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Maximum pumping speed at 50 Hz: 3.4 m³/h; maximum pumping speed at 60 Hz: approx. 2.2 cfm; ultimate vacuum (absolute pressure) without gas ballast: 1.5 mbar (~1.1 torr); ultimate vacuum with gas ballast activated: 3.0 mbar (~2.2 torr); number of heads: 4.	Vacuubrand	2020
77	Chemistry vacuum system (MZ 2C NT +AK SYNCHRO+EK)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Maximum pumping speed: 2.0 m³/h at 50 Hz; ultimate vacuum (absolute pressure): ~7 mbar (≈5 torr) without gas ballast; ultimate vacuum with gas ballast: ~12 mbar (≈9 torr); connections: inlet 2 × DN 8-10 mm hose; outlet DN 8-10 mm hose; cooling: 2 × DN 6-8 mm hoses.	Vacuubrand	2015
78	Water circulating vacuum pump (SHZ-D III)	2	General laboratory equipment	Creates negative pressure/vacuum by discharge through circulating	Power: 180 W; maximum circulating-water flow rate: ~60 L/min; vacuum created ~0.098 MPa at water temperature of 0 25 °C; water tank volume: ≈15 liters	Lichen	2016
79	Centrifuge (HERMLE Z366)	1	General laboratory equipment	Separation of the components of a mixture by centrifugation.	Swing-out rotor capacity 6×50 ml, maximum speed: 13,000 rpm	HERMLE Labortechnik GmbH	2021
80	B.E.T. equipment (Quantachrome Nova 1200)	1	Chemistry and Materials Science	Measurement of the specific surface area of materials by the Brunauer-Emmett-Teller (BET) method	Specific surface area and pore-size distribution 17-5000 Å; adsorption gases: N2, O2, Ar, CO2, CO, butane or any non-corrosive gases; automatic sample degassing system: with two stations, computer-controlled, at multiple temperatures.	Quantachrome Instruments	2005
81	Fluorescence/Luminescence spectrometers (Perkin Elmer LS55)	1	Spectroscopy	Allows measurement of the fluorescence, phosphorescence and chemiluminescence or bioluminescence of a liquid, solid, powder or thin-film sample.	Excitation source: pulsed xenon lamp; detector: S5 photomultiplier modified for operation up to approximately 650 nm. The Monk-Gillieson monochromators cover the following ranges: excitation 200-800 nm with selectable zero order. Emission 200-650 nm with standard photomultiplier with selectable zero order; spectral pass band: excitation slits (2.5-15.0 nm) and emission slits (2.5-20.0 nm) can be varied and selected in 0.1 nm steps.	Perkin Elmer	2006
82	OLYMPUS BX53M polarizing optical microscope	1	Chemistry and Materials Science	Identification of birefringent samples: crystalline powders, liquid crystals, metallomesogens.	Optical system: UIS2; focus (coaxial on vertical plane): 25 mm travel; maximum sample height: Reflection: 65 mm (without spacer) / 105 mm (with adapter). Reflection/transmission: 35 mm (without spacer) / 75 mm (with adapter); observation tube: wide field FN22; supported observation techniques: bright field, dark field, polarization.	Olympus	2016
83	Supercritical CO2 extraction system	1	Equipment for analytical chemistry	Drying with supercritical fluid	Autoclave capacity: 50 cm³; autoclave dimensions: inner diameter: 45 mm; depth: 32 mm; maximum pressure: 125 bar; the installation is fitted with filters for CO2 filtration.	SC POPSOFT SRL	2008
84	Oven (Witeg WISD 23)	1	General laboratory equipment	Heating and/or drying of chemical substances	Temperature range: from ambient + ~5 °C to 200 °C; vacuum range: approx. 10-750 mmHg (≈0.63 mbar); temperature control resolution: fluctuation of approximately ±2.0 °C at 100 °C; internal volume of 18.6 liters	WITEG Labortechnik GmbH	2015

85	National Library of Compounds with Biological Activity (LNCB)	1	Computational chemistry and related fields	An "open-access" resource available to all those interested in the drug discovery process and beyond.	At present, the LNCB library comprises 5692 compounds, of which 2692 are approved drugs and natural compounds and 3000 are diversity compounds.		2023
86	Licensed database: SciFinder	1	Computational chemistry	Databases	Contains the world's largest and most complete collection of chemical information, indexed by CAS experts	CAS (Chemical Abstracts Service)	2023
87	Licensed database: Cambridge Structural Database	1	Computational chemistry	Databases	The largest and most important crystallographic database in the world, which collects and distributes data on molecular and crystal structures.	Cambridge Crystallographic Data Centre	2024
88	Computational chemistry and cheminformatics software (Schrodinger, Reactor-Chemaxon, Gaussian and GaussView, Simca, ChemDraw, OriginPro)	1	Computational chemistry	Advanced theoretical calculations and molecular drawing	Various software programs for computational chemistry and cheminformatics: **1. The Gaussian and GaussView** software package performs ab initio electronic-structure calculations to predict the energies, molecular structures and chemical properties of complex molecular systems. **2. The Schrodinger platform** for drug discovery and materials science provides tools for multiple purposes: docking, molecular dynamics, high-performance quantum-mechanics calculations, including an embedded pipeline for drug discovery. **3. Reactor (Chemaxon)**, based on defined reaction schemes, performs virtual reactions on a large number of reactants and generates the corresponding products, in order to explore the available chemical space on a large scale.	Schrodinger, Inc. Gaussian, Inc. Chemaxon Ltd Sartorious Revity Signals OriginLab	2023, 2024
					4. Simca 18 is Sartorius software used for multivariate data analysis. **5. ChemDraw** is software that provides capabilities for drawing and graphical representation of molecular structures, from the simplest to the most complex, predictions of physicochemical properties, reaction mapping, etc. **6. OriginPro** provides advanced data-analysis tools and applications, statistical analysis, creation of publication-quality graphs, batch processing to manage repetitive tasks, etc. **7. CorelDraw -** software suite for graphic editing.		

89	Lenovo 4U ThinkSystem SR860 V2 GPU server – 6 nodes + data storage system	1	Computational chemistry	Processing large amounts of data and performing complex theoretical calculations	High-performance computing system composed of 6 nodes, each node - 1 NVIDIA A30 24GB PCIe Gen4 Passive GPU, NVIDIA CUDA cores - 3584 FP32 CUDA cores per GPU, GPU memory - 24 GB HBM2 - 4 Intel Xeon Gold 5318H 18C 150W 2.5GHz processors, RAM memory 64 GB (16GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM/CPU). In total, 432 cores/864 threads, 384 GB memory, 6 NVIDIA GPUs – 144 GB memory. Data storage system: 1 IBM FlashSystem 7300, 768GB RAM memory. Part of an infrastructure dedicated to processing large amounts of data and performing complex calculations in reduced time due to the combination of several high-speed processors and large-capacity RAM, which allow simultaneous execution of tasks.	Lenovo	2023
90	Laptop (Lenovo)	4	Computational chemistry	Processing and editing information resulting from research activity	16GB RAM, 1TB SSD, Lenovo Yoga Slim 7 Pro 14ACH5 14”, Lenovo ThinkBook 15 G2 ITL 15” and Lenovo V17G2 ITL 17”,	Lenovo	2022
91	Computing system with printer	1	Computational chemistry	Theoretical calculations, data analysis and processing	Dell PowerEdgeT40 32GB RAM +Monitor AOC, UPS APC1000, LPB623CDW Canon Printer	Dell, Canon	2022
92	iPad Tablets (Apple)	3	Support equipment	Work meetings and public presentations	Apple 11 inch iPad Pro (3rd) 128GB tablet + Logitech keyboard	Apple	2022
93	Professional Displays	2	Support equipment	Work meetings and public presentations	Philips Professional Display - 70PUS7906/15 Samsung Professional Display - UE75AU7172UXXH	Philips, Samsung	2022
94	Interactive package for work meetings and public presentations	1	Support equipment	Work meetings and public presentations	Lenovo ThinkBook laptop + A-Data external HDD, Evoboard interactive whiteboard		2022
95	Sound and video system	1	Support equipment	Work meetings and public presentations	Eacom SV3100 audio-video kit with unidirectional microphones + Eacom hub + HD 1080p/60 video lens, Logitech Conference Cam webcam + stand, providing high-quality HD video and clear sound, noise-reduction technology and intuitive controls.	Eacome	2022
96	Graphic workstation	8	Computational chemistry	Advanced theoretical calculations and data processing	Processor: IntelCore i9 12900k, SSD storage capacity: 1TB, memory capacity: 32GB DDR5 RAM, video card: nVidia RTX A2000, 12GB memory	Verasys International	2023
97	16GB computing systems	5	Computational chemistry	Theoretical calculations, analysis and data processing	Intel Core i7-12700 processor, SSD storage capacity: 480 GB PCIe NVMe, memory (GB): 16 GB DDR4 RAM, integrated video card, Windows+Office, AOC monitor,	Verasys International	2023
98	32GB computing systems	6	Computational chemistry	Theoretical calculations, data analysis and processing	Intel Core i7-12700 processor, SSD storage capacity: 480 GB PCIe NVMe, memory (GB): 32 GB DDR4 RAM, integrated video card, Windows+Office, AOC monitor,	Verasys International	2023

99	Thermogravimetric Analyzers (TGA 5500)	1	Thermal analysis equipment	Determination of material composition, thermal stability, decomposition kinetics, phase transformations.	Measurement principle: thermogravimetric analysis (TGA); temperature range: from ambient temperature to 1200 °C; weight resolution: under 0.1 µg (micrograms); weighing range: up to 1000 mg; heating rate (linear): from 0.1 °C/min to 500 °C/min; patented infrared (IR) furnace; Tru-Mass™	TA Instruments	2023
100	Elemental analyzer (UNICUBE)	1	Analytical equipment	Determination of HCNS elemental composition by the complete oxidation method	Operating principle: dynamic combustion; high-precision thermal conductivity detectors (TCD); measurement range: concentrations from 0.1 mg to 150 mg element; sample capacity: up to 500 mg for solid samples and up to 500 µL for liquid samples	Elementar Analysensysteme	2023
101	FluoroMax Plus Benchtop Spectrofluorometer	1	Spectrometrie	Investigation of photophysical properties (emission maxima, lifetimes, emission quantum yield) of materials in condensed phases and in solution	Excitation wavelength range: 200 nm to 850 nm; emission wavelength range 200 nm to 850 nm, with extension options up to IR; light source: 150 W Xenon lamp, continuous arc; detector: high-sensitivity photomultiplier (PMT), thermoelectrically cooled; scanning speed: up to 12,000 nm/minute; Czerny-Turner monochromators	Horiba Scientific	2023
102	Benchtop NMR (Fourier 80)	1	Spectrometrie	Identification, determination and/or confirmation of chemical structures, from small and simple molecules to larger and more complex species.	Cryogen-free, temperature-controlled permanent magnet; operates at 1.88 Tesla (80 MHz/1H); allows performing 1D experiments for 1H and 13C nuclei, as well as 2D correlations (COSY, HSQC, HMBC etc.). 1H sensitivity ≥160:1 (1% ethylbenzene); 1H resolution (@ 50/0.55/0.11% signal height): ≤0.4/15/30 Hz; no deuterated solvents are	Bruker	2022
103	Witeg SWOV 30 vacuum oven equipped with PC 611 Select vacuum pump	1	General laboratory equipment	Heating and/or drying of chemical substances	Oven: internal volume 30 liters; temperature range: +5 °C to 200 °C; vacuum range: 10-750 mmHg; vacuum pump: number of stages: 3 (type MD 4C NT); flow rate 3.4 m³/h (at 50 Hz); final vacuum (maximum) 1.5 mbar (absolute); final vacuum (with gas ballast) 3 mbar	Witeg Labortechnik GmbH, Vacuubrand	2023
104	Rotary evaporator Hei-VAP Expert equipped with LVS 610 T - EF vacuum pump	1	General laboratory equipment	Removal of solvents and purification of substances	Rotation speed range: 10-280 rpm; bath heating power: 1,300 W; bath temperature range: 20-210 °C. Pump: pumping speed at 50 Hz: 4.9 (81.7) m³/h (l/min); maximum pressure 2 mbar. Chiller: working temperature range: -10 ... +40 °C; temperature stability: ±0.5 °C; pump capacity - flow pressure:	Heildoph / Welch	2023
105	Chemistry-HYBRID pump (RC6)	1	General laboratory equipment	Generation of vacuum for drying compounds in an oven and for distillations	Hybrid rotary-vane and diaphragm pump for optimized corrosion resistance; number of stages: 2 + 2; flow rate (maximum speed) 50 Hz 5.9 m³/h; final vacuum (absolute), without gas ballast 2×10^{-3} mbar; final vacuum (absolute), with gas ballast 1×10^{-2} mbar	Vacuubrand GMBH	2023

106	JASCO J-1500 Circular dichroism spectrometer with the JASCO LC-4000 HPLC system	1	Chemistry and Materials Science	Detection, separation and structural analysis of chiral compounds.	Spectral range 163 nm to 920 nm; 150 W xenon lamp; detector: photomultiplier tube; scan rate: up to 8,000 nm/minute; Peltier mode for thermal studies. HPLC: dual-piston pump system; flow-rate range 0.001 mL/min to 10 mL/min; UV-Vis detector, with wavelength range 190-900 nm; chiral detector, column thermostating, 4 °C to 90 °C; capacity 180 vials	JASCO Corporation	2023
107	Pure Chromatography System with Flash (Buchi C-815)	1	Materials synthesis and equipment for analytical chemistry	Purification and separation of organic compounds	Maximum pressure: 50 bar; flow rate 0-250 mL/min; 3-piston pump; binary, isocratic, linear, step gradient; UV/Vis and ELSD detectors; wavelength range 200-800 nm	Buchi Labortechnik AG	2022
108	Multimode microplate reader (Varioskan™ LUX)	1	Equipment for molecular biology / biochemistry research	Performs a wide range of biological and chemical assays in microtiter plates, using multiple detection technologies	Detection modes: absorbance (UV-Vis), fluorescence intensity, luminescence, time-resolved fluorescence, AlphaScreen/AlphaLISA; light source: xenon flash lamp and LED (for AlphaScreen); wavelength selection: dual monochromators (for absorbance, spectral FI) or filters (for TRF, AlphaScreen), plates from 6 to 96 wells	Thermo Fisher Scientific	2023
109	Precision balance (Radwag WLC 1/A2/C/2)	1	Equipment for analytical chemistry	Weighing of samples	Maximum capacity (Max): 1 kg; readability: 0.01 g; weighing pan: 195 × 195 mm; stabilization time: ≈3 s; repeatability: ~0.015 g; linearity: ±0.03 g	RADWAG	2022
110	Plus analytical balance (Radwag AS 520.R2)	1	Equipment for analytical chemistry	Weighing of samples	Maximum capacity: 520 g, readability: 0.1 mg; standard repeatability [5% Max] = 0.08 mg; standard repeatability [Max] = 0.25 mg.	RADWAG	2022
111	Plus analytical balance (Radwag AS	1	Equipment for analytical chemistry	Weighing of samples	Maximum capacity 82/220 g, readability 0.01/0.1 mg, standard repeatability [5% Max] = 0.01 mg; standard repeatability [Max] = 0.06 mg.	RADWAG	2022
112	Water vacuum pump (SHB-III III)	2	General laboratory equipment	Creates negative pressure/vacuum by discharge through circulating	Power: 180 W; maximum circulating-water flow rate: ~80 L/min; vacuum created ~0.098 MPa at water temperature of 0 25 °C; water tank volume: ≈15 liters	Lichen	2023
113	Differential scanning calorimeters (DSC 250)	1	Equipment for analytical chemistry	Determination of thermal processes: melting, crystallization, solid-solid transitions, polymorphism, glass transitions, heat-capacity measurements	Temperature range: room temperature to 725°C; temperature accuracy: +0.05°C; heating rate: 0…100°C, in steps of min. 0.01°C; thermal precision ("enthalpy precision"): ±0.08%.	TA Instruments	2023
114	Magnetic stirrer (Hei-PLATE)	6	Hotplates with magnetic stirring	Mixing and heating of chemical compounds	Rotation speed range 100-1,400 rpm; maximum mixing capacity (H_2O) 20 l; hotplate temperature 20-300 °C; Heating power 800 W.	Heidolph Instruments	2023
115	Liquid handling automation systems (Biomek i7)	1	Equipment for molecular biology / biochemistry research	Optimization of the reliability and efficiency of high-performance liquid handling.	Features up to 45 deck positions, includes multichannel pipette heads and Span-8 in an enclosed workspace. Unit and instrument type: 96-channel head 1 µL-300 µL; 96-channel head 5 µL-1200 µL; multichannel-384 head 0.5 µL-60 µL; Span-8 head	Beckman Coulter Life Sciences	2023

116	Microwave-assisted synthesis (synthWAVE)	1	Chemistry and Materials Science	Accelerates and optimizes chemical reactions in an environment with controlled temperature, pressure and stirring.	Operating range: up to 300 °C and 199 bar pressure. "Single Reaction Chamber (SRC)" technology – a PTFE-lined reaction vessel in a ~1 L stainless steel body, racks for vials in different configurations; integrated stirrer (mechanical/magnetic); cooling system to reduce cooling	Milestone	2023
117	Automatic Tube Decap (LabElite DeCapper	1	Equipment for molecular biology / biochemistry research	Automatic uncapping/capping of tubes with internal or external	Supported tube range: microtubes 0.25 mL-1.4 mL and cryovials 1-10 mL; supported format: 24, 48, 96 racks and internal/external threads.	Hamilton Storage	2023
118	Robotic Sealer and Desealer for Microtitre Plates (HJ@SealPeelStation)	1	Equipment for molecular biology / biochemistry research	Sealing and unsealing of microplates used in bioanalysis laboratories	The device identifies the microplate type and applies the corresponding seal without foil overlaps. Sealing by pressure, not by heating or compressed air; automatic foil removal for access to the plate contents: the device has sensors for detecting the removal area	HJ-Bioanalytik	2023
119	Muffle furnace (Nabertherm L9/11)	1	General laboratory equipment	Performs firings of the highest quality for ceramic, glass, porcelain and stoneware projects	Equipped with a B510 controller with 5 programs, maximum temperature 1100°C	Nabertherm	2023
120	Dissolution apparatus (Agilent 708-DS)	1	Equipment for molecular biology / biochemistry research	Performing controlled drug-release tests	Bath temperature range: ambient +5 °C to 55 °C; temperature probe accuracy: ±0.1 °C; rotation speed: 10-250 rpm. Rotation speed accuracy: ±1% for >25 rpm, ±2% for 10-25 rpm; evaporation: loss <1% under specified conditions.	Altium	2023
121	Acoustic liquid handler (Echo 650)	1	Equipment for molecular biology / biochemistry research	Liquid handling using acoustic energy	Transfers volumes of 2.5 nL-5 µL in 96- and 384-well plate formats. Sound waves eject precisely sized droplets from a source onto a microplate, slide or other surface suspended above the source; used in drug discovery, compound management, genomics research, synthetic biology, proteomics, functional screening or other research	Beckman Coulter Life Sciences	2023
122	Automated digital inverted microscope (EVOS M7000 Imaging System)	1	Equipment for molecular biology / biochemistry research	Intended for multichannel fluorescence imaging, transmitted light and color imaging for cell research, 3D and screening-type applications.	Optics: infinity-corrected system; objectives with RMS mount, 45 mm parfocal distance; imaging modes: fluorescence, illumination: 5-position chamber, LED with lifetime >50,000 hours. Approximate range 120 mm × 80 mm with sub-micrometric resolution. Monochrome camera and 3.2 MP color CMOS camera (2048 × 1536 pixels), with pixel size ~3.45 µm. Range from 1.25× to 100	Thermo Fisher Scientific	2023
123	Triple quadrupole gas chromatography-mass spectrometer (GC/MS) (Agilent 7010C)	1	Spectrometry	Allows the separation, detection and quantification of organic compounds that can be vaporized without decomposition.	Mass range: m/z 10 → 1,050; instrument detection limit: ≤0.5 fg; scan speed: up to ~20,000 Da/s; operating modes: standard electron impact (EI) ionization, optional chemical ionization (CI); ion source: High Efficiency Source (HES); Detector: "Triple-Axis HED-EM" system	Agilent Technologies	2023

124	LC-MS system (Orbitrap IQ-X Tribrid Mass Spectrometer with Vanquish Neo UHPLC)	1	Spectrometry	Allows the separation, detection and determination of the structure, composition and purity of liquid or soluble organic compounds	Vanquish Horizon UHPLC system: maximum system pressure: 1500 bar; flow-rate range: 0.001-5 mL/min; pump options: binary (35 µL); pH range: 2–12, chloride concentration up to 1 mol/L; injected volume range: 0.01-25 µL; Vanquish FG diode-array detector. Thermo Scientific Orbitrap IQ-X tribrid MS: mass range: m/z 50 → 2,000 for Full MS scanning; for MS^n detection: m/z 40 → 2,000. Resolution from ~7,500 to 500,000 (FWHM) at m/z 200; with the "1M" option it can reach up to 1,000,000 (FWHM) at m/z 200. Mass accuracy: <3 ppm RMS using external calibration; <1 ppm RMS with internal calibration (EASY-IC); acquisition speed: in Orbitrap MS^n mode up to ~40 Hz; in ion trap MS^n mode up to ~45 Hz.	Thermo Fisher Scientific	2023
125	CAPP Rondo 4-Place Plate Shaker	2	Equipment for molecular biology / biochemistry research	Simultaneous shaking of up to 4 different microplates.	Brushless DC / BLDC motor; motion type: orbital with diameter of approximately 3 mm for the 4-plate variant. Variable speed: from ≈200 rpm to 1,200 rpm; alternating shaking function with adjustable interval ~30-90 seconds. Plate capacity: up to 4 microplates simultaneously	CAPP A/S	2023
126	Plate washer (Agilent BioTek 50 TS)	1	Equipment for molecular biology / biochemistry research	Automatic washing of microplates, used in applications such as ELISA, cell-based assays, washing of magnetic or biological	Wash volume: between 25 µL and 3,000 µL; flow rate between 150 µL/s and 1,000 µL/s; number of programmable wash cycles: from 1 to 10; Microplate Types: 96-well	Agilent Technologies	2023
127	Water ultrapurification system	1	General laboratory equipment	Conversion of tap water into ASTM Type 1 water	Produced water quality: conductivity for type 1 water: ~0.055 µS/cm (at 25 °C) => resistance ~18.2 MΩ·cm; TOC (Total Organic Carbon) values for UV/UF versions: ~1-5 ppb; number of bacteria <0.01 CFU/mL (in ultrapure versions) and particles >0.2 µm <1/mL. Production capacity: 12 L/h	Thermo Fisher Scientific	2023
128	Ultra-low temperature freezers	1	Equipment for molecular biology / biochemistry research	Provides the highest standards of protection and sustainability for ultra-low-temperature storage	Operating temperature between -80°C and -50°C, large storage capacity - sufficient for 30,000-60,000 2 ml vials.	Thermo Fisher Scientific	2023
129	Liquid nitrogen generator (TRITON 2S+)	1	Support equipment	Provides nitrogen with purity >99%	Liquid nitrogen production ~8 L/day; purity >99%; liquid nitrogen pressure: up to ~1.5 bar; equipped with a 35-liter Dewar storage vessel.	Noblegen Cryogenics Ltd	2023
130	SAXS/WAXS X-ray diffractometer with GISAXS module (XEUSS 3.0)	1	Chemistry and Materials Science	Provides detailed structural information about the nanometric organization of a material, based on the way X rays are scattered by atoms.	Allows combinations of SAXS + WAXS + GISAXS techniques; the covered scattering-vector (q) range is wide, down to ~0.0001 $Å^{-1}$ at very small angles, and up to ~4-5 $Å^{-1}$ or more for WAXS; 2D detector, microfocus X-ray source for high flux and good collimation. Motorized mode for changing detector-sample distance.	XENOCS SAS	2023

131	Solvent capture system for WCT-80 high-vacuum pump	1	General laboratory equipment	Capture of evaporation vapors originating from rotary evaporators, freeze-drying and vacuum distillation systems	Cooling down to -80 C; capacity: 10 L; refrigerating/compressor power: ~750 W; construction: internal stainless-steel bath, painted-steel exterior, polyurethane insulation (~20 mm) between walls.	WITEG Labortechnik GmbH	2023
132	Smart sterilization system (ST DRY PV -B 23L / SLW 53 IG)	1	General laboratory equipment	Hot-air sterilization	Horizontal autoclave with drying: capacity: ~23 liters; steam sterilization, horizontal loading; programmable, with integrated vacuum drying; sterilization temperature: typically 121 °C or 134 °C (with pressure ~2.1 bar at 134°C). Forced-convection oven: chamber capacity: ~56 liters; temperature range: from +5 °C above ambient temperature to +300 °C; stability/homogeneity: at 105 °C fluctuation ±0.2 °C; variation ±2 °C.	J.P. Selecta / Pol-EkoA.Polok-Kowalska sp.k.	2023
133	Sample drying system (FreeZone Plus 4.5)	1	Conditioning of plant and biological samples	Freeze-drying of aqueous plant, biological and biochemical samples.	Ice collection capacity: 4.5 liters; water removal rate: up to ~2 liters of water in 24 h; collector temperature: -84 °C	Labconco	2023
134	Label printer (i3300)	1	Support equipment	Label printing	Printing technology: thermal transfer; display type: LCD touchscreen; resolution (dpi): min 300 dpi; label width (mm): max 107.95 mm; print width (mm): min 6.35 mm - max 101.98 mm	Brady	2023
135	Barcode scanner (Gryphon I GBT4500 + WLC4090)	2	Support equipment	Automatic barcode scanners	Scanner type: wireless; scan type: 1D, 2D; scanning technology: imager; connection interface: wireless; communication: Bluetooth; protection standard: IP52	Datalogic	2023
136	Low-temp Stirring Reaction Bath (LSRB-8002)	1	General-purpose laboratory equipment	Chemical syntheses requiring low temperatures and magnetic stirring	Temperature range: down to ~ -80 °C; magnetic stirring: 100 ~ 1000 rpm	Labfreez Instruments	2023
137	Water distiller-deionizer (C7-1001)	1	General-purpose laboratory equipment	Water purification	Produced water conductivity: <0.1 mS/cm; produced water resistivity: >5 MΩ × cm; pure water flow rate: ≥4 L/min; pure water tank of min. 50 L; pre-filter for reducing chlorine and organic substances from the water of alimentare	Adrona Sia	2023
138	Flake ice maker	1	General-purpose laboratory equipment	Ice production	Productivity ≥50 kg/24h; flake ice storage capacity ≥9 kg; cooling system: air	Maxima	2023
139	Portable incubator (ICT-P)	1	Equipment for molecular biology / biochemistry research	Allows incubation of samples (biological samples, field tests, etc.) at controlled temperatures	Useful volume: 18 L; temperature range: from +10 °C to +65 °C; accuracy at 37 °C: 0.2°C.	FALC Instruments SRL	2022
140	Refrigerated centrifuge with swing-out rotor	2	General laboratory equipment	Separation by centrifugation	Tube capacity: up to 4 × 145 mL (TX-150 rotor) and 6 × 50 mL (HIGHConic III rotor); maximum speed: up to 17,850 rpm for fixed-angle rotor; maximum centrifugal force (RCF): up to ~30,279 × g; temperature range: from approximately -10 °C to +40 °C	Thermo Fisher Scientific	2023

141	Portable refrigerator (CX-40)	1	General laboratory equipment	Low-temperature storage of biological products or sensitive liquids during transport	Temperature range: from -18oC to +10oC; volume: min. 40 liters; cooling system: iceless; cooling technology: compressor	Vevor	2022
142	Ultrasonic bath	1	General-purpose laboratory equipment	Improvement of the dissolution of compounds with low solubility. Degassing of solutions.	Tank volume: 6.8 liters; ultrasound frequency: 37 kHz (kilohertz); effective ultrasound power: 160 W; includes integrated heater (from 30°C to 80°C).	Elma Schmidbauer GmbH	2022
143	Laboratory UV lamp	2	General-purpose laboratory equipment	Identification of chemical compounds at a precise wavelength.	Wavelengths: 254 nm and 365 nm; power: minimum 2 × 8 W; filter operating life: minimum 3000 hours for 254 nm; filter for minimizing white-light emission; filter dimensions: minimum 140 mm × 45 mm;	Vilber	2022
144	Laboratory conductometer	1	Equipment for analytical chemistry	Determination of conductivity	It is equipped with LE740 (0.01–500 uS) and LE703 (0.01-200 mS) electrodes.	Mettler Toledo	2022
145	Laboratory pH meter	1	Equipment for analytical chemistry	Determination of pH	Equipped with an LE422 pH electrode, with gel electrolyte filling, specially designed for measurements in small or narrow-neck vessels or test tubes.	Mettler Toledo	2022
146	Compact recirculating cooler (Julabo F250, RC-10 DUO)	2	General laboratory equipment	Allows maintaining a constant cooling-fluid temperature for external cooling circuits	Julabo: operating temperature: -10°C...+40°C; pump power: max. 11 l/min; pump pressure: 1.0 bar. RC-10 DUO: operating temperature: -10°C...+40°C; pump power: max. 11 l/min; pump pressure: 1.0 bar.	Julabo / VWR	2023
147	Laboratory refrigerators	4	Support equipment	Storage of samples and reagents at controlled temperatures	Capacity, total volume/net volume: min. 350 liters/min. 290 liters; cooling system: by ventilation. Equipped with at least 1 cooling fan, to ensure air circulation and temperature stability; adjustable temperature, from min. 3oC.	Liebherr	2023
148	Laboratory freezers	2	Support equipment	Storage of samples and reagents at controlled temperatures	Features an adjustable temperature range, around -9°C to -30°C; net volume capacity: 240 liters;	Liebherr	2023