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FOR SCIENCE AND TECHNOLOGY



DU-NanoMed

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Nanomedicine research unit | **وحدة أبحاث طب النانو**



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List of equipment in nanomedicine research unit and their applications

Device	Model	Information	Device image
Electrospinner	**NANON-01B** **Japan**	**About:** NANON-01B Electrospinning System for R & D. The model NANON-01B is a best-selling nanofiber electrospinning system for lab use. A variety of materials can be spun by programming spinning conditions and combining system parts such as spinnerets and collectors. **Specifications:** High voltage supply = 0.5kV to 30kV, Current 50μA, Traverse speed =0 to 300mm/s, Programmable parameter: −High voltage output −Pump discharge volume −Collector rotation speed ・Frequency and interval of cleaning −Moving distance of spinneret −Moving speed of spinneret, Collector rotation speed: Drum−50 to 3000 rpm Mandrel-50 to 100rpm, Needles to collector: 50 to 150mm, Pump discharge: 0.1 to 100ml/hr, Syringe volume: 2.5 / 5.0 / 10.0 ml **Applications:** ■ Healthcare Regenerative medicine, wound treatment, drug delivery system ■ Environmental engineering Water filter, dust filter, face mask ■ Functional goods Functional clothes, functional food ■ Electronic materials Battery materials, high conductivity materials, transparent conductive film	
Electrospinner accessories		**Collectors:** Plate collector, Drum Collector_φ200W200, Disk Collector, Mandrel Collector (2, 4, 6,8, 10 mm) **Spinneret:** Clip Spinneret_75, Tubeless Spinneret_75, Ultra-thin Coaxial Spinneret_75, MJS_4holes_Small	

Zetasizer Ultra Red	**Malvern Panalytical Ltd., Malvern** **UK**	**About:** The Zetasizer Ultra (red label) is one of the advanced version of Malvern's dynamic light scattering devices. It is used to measure particle and molecular size, particle charge and particle concentration using ZS Xplorer software. It offers two unique measurement capabilities: Multi-Angle Dynamic Light Scattering (MADLS®) and particle concentration, to offer even greater insight into your samples. **Specifications:** **1. Particle size and molecular size** Measurement principle: Non-Invasive Back Scatter (NIBS) Dynamic Light Scattering Dynamic Light Scattering (90° and 13°) Multi-Angle Dynamic Light Scattering (MADLS) Measurement angle: 173°, 13°, 90° Measurement range: Diameter: 0.3 nm - 15 µm Concentration range: Minimum; **0**.1 mg/mL 15 kDa Protein-Maximum; 40% w/v **2. Zeta potential** Measurement principle: Mixed-Mode Measurement phase analysis light scattering (M3-PALS) Size range: 3.8 nm – 100 µm Concentration range: 1 mg/mL to 40% w/v Maximum conductivity: 260 mS/cm	 

		3. Particle concentration Measurement principle: MADLS - Particle Concentration (Mie) Concentration range: $1x10^{8}$ to $1x10^{12}$ particles/mL **4. System** Avalanche Photodiode Detector He-Ne (633 nm), 10 mW Max **Applications** Bioscience and biopharmaceuticals; Pharmaceuticals and drug delivery; Paints, inks, and coatings; Advanced Nanomaterials; Food and drink	
Shimadzu I-IV-VIS Spectrophotometer	Model: UV-1900i Part No.: 207-25700-58 Japan	**About:** The UV-1900i is a double-beam UV-Vis Spectrophotometer using Shimadzu's original LO-RAY-LIGH™ diffraction grating technology. LabSolutions UV-Vis is a next-generation Shimadzu UV control software pursuing efficiency of analysis. LabSolutions UV-Vis software with easy-to-use is included as standard. **Specifications:** - **Photometric Measures**: the photometric value at a single wavelength or multiple (up to eight) wavelengths - **Spectrum Measures:** a sample spectrum using wavelength scanning	

		- Quantification: Generates a calibration curve from the measurement of standards, and then calculates the concentrations of unknowns. **Applications:** Plasmonic absorbance phenomenon of nanoparticles, band gap calculation of semiconductors, pharmaceuticals and life Sciences, chemistry, foods.	
SONICS digital Ultrasonic homogenizers Processors	VCX 750 U.S.A	**About:** Ultrasonic Processors for Small and Medium Volume Applications **Specifications:** Power Output: 750 watt maximum, Frequency 20kHz, Standard Probe (1/5 (20-250 ml, 75% amplitude), 1/8 (1-15 ml, 40% amplitude), ¼ (10-50 ml, 75% amplitude. **Applications:** nanotechnology (producing nanoparticle materials and Graphene dispersions), cell lysing, sample preparation, homogenization, ChIP Assay, emulsification, disaggregation and deagglomeration, plus uses in the field of sonochemical processing.	
Christ bench top Freeze dryer Vacuum pump RZ 2.5 230 V, 50 Hz Number of stages 2	ALPHA model 1-2 LD plus Germany	**About:** freeze-drying of solid or liquid products in ampoules, vials or dishes. The freeze-dryer is suitable for freeze-drying solid substances and aqueous solutions (e.g. bacteria and virus cultures, blood plasma, serum fractions, antibodies, sera, vaccines and pharmaceutical products such as chloramphenicol, streptomycin, vitamins, ferments and plant extracts for biochemical tests). **Specifications:** Ice condenser capacity 2,5 kg, Ice condenser temperature -55 °C	

		Applications: • Preserving the product characteristics of the original substances • Preserving the original form (e.g. animal preparations, archaeological objects or flowers) • Conditioning the material (e.g. freeze-dried fruit) • Chemical analyses (e.g. trace element analyses of foods, sludge or soil)	
Binder drying and heating chambers	**model ED-S 56** **Germany**	**About:** BINDER drying chambers with natural convection or forced convection are renowned for their high quality and reliability. **Specifications:** Temperature range: +7 °C above ambient temperature to +250 °C APT.line™ preheating chamber technology Natural convection Adjustable exhaust air flap Controller with timer function **Applications:** Medical and research ovens and drying and heating chambers	
Automatic microprocessor control vertical autoclave	**Tomy 15-Model ES-315** **Japan**	**About:** The TOMY Autoclave ES-215/315 (high-pressure steam sterilizer) is an apparatus used for sterilizing materials with saturated steam under high pressure. **Specifications:** Operating temperature range(during sterilizing): 105 - 132°C, Operating pressure range: 0 - 186kPa, Maximum operating pressure: 216kPa **Applications:** material sterilization, material synthesis, cell culture , microbiology	

Christ Rotational-Vacuum-Concentrator	**model RVC 2-18 CDplus HCl** **Germany**	About: Rotational vacuum concentrators are used for gentle drying of fluid products. Specifications: Rotor speed [1.500 rpm], max., Temperature control range [+30 to +60 °C], Operating vacuum 7 mbar, Recommended solvents: Acetonitrile, Methanol, Ethanol, Toluene, Isopropanol, Methylene chloride (DCM), Acetone, Ethyl acetate, DMSO, TFA. Applications: Drying of nanoparticles conjugated with biomacromolecules such as protein, miRNA, DNA	

