#### [Anexa 6.1.1 - Specificații tehnice (B/S)](#Anexe)

Proiectul privind Învățământul Secundar (ROSE)

Schema de Granturi Pentru Universitati – SGCU - SS

Beneficiar: Universitatea Politehnica din Bucuresti

Titlul proiectului: Educatie, formare si dezvoltare profesionala in domeniul Ingineriei Medicale - EduMed

Acord de grant nr.: AG352/SGU/SS/III din 08.09.2020

**FORMULAR DE SPECIFICAȚII TEHNICE**

 **Achiziția de bunuri**

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| **Denumirea achiziției:** Echipament – Granulometru laser |

| **Specificații tehnice solicitate**  |
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| **1.** | **Denumire produs: Granulometru laser - Laser Diffraction Particle Size Analyzer**  |
| **Descriere generală:** *Measurement range:* * *With ultrasonic dispersing unit 17nm(0.017μm) to 2500μm*
* *With mechanical dispersing unit: 17nm(0.017μm) to 400μm*

**Configurația sistemului:****PC and software****Laser Difraction Measurement unit****Ultrasonic dispersing unit** **Mecanical dispersing unit****Cyclone Injection Type Dry Measurement Unit** |
| **2.** | **Detaliile specifice şi standardele tehnice minime acceptate de beneficiar:****Hardware Specifications****Measurement Unit: [230V]***One optical mersurement unit for full range. Will not be accepted system with split domain of measuring.* *Light source: Red Semiconductor laser (Wavelength 680 nm)**Light detector: Detector elements for UV semiconductor laser**Total 84 elements (78 forward, 1 side, 5 back)**System Compliance: Class 1 Laser Product, CE compliant**Required power supply: 230 VAC / 100 VA**Operating Environment: Temperature: 10 to 30°C, Humidity: 20 to 80 % (no condensation)***Ultrasonic Dispersing uint [230V]***Dispersing bath: Capacity: 100～280cm3**Sonicator: Frequency about 32 kHz, output about 40 W**Liquid Pump: Radial pump, maximum flow rate 2000cm3/min**Liquid Pump Material: Stainless (SUS 304, SUS 316), Tetrafluoroethylene (PTFE),**Perfluoroelastmor (FEP) or Kalrez, Thermoflon Pascal (inside)**Liquid Supply Pump: Diaphragm pump, maximum flow rate 750cm3/min**Liquid Supply Pump Material: Tetrafluoroethylene, polyvinyl dene fluoride**Flow Cell: Quartz glass* *Required power supply: 230 VAC / 200 VA**Operating Environment: Temperature: 10 to 30°C, Humidity: 20 to 80 % (no condensation)***Mecanical dispersing unit***Cell Material: Quartz glass**Required Liquid Volume: Approx. 12 cm3**Stirrer Mechanism: Up-and-down movement of blade**Operating Environment: Temperature: 10 to 30 °C, Humidity: 20 to 80 % (no condensation)***Software Specifications****Measurement and Data Display Functions***Measurement of Particle Size Distribution: Allows measurements using measurement assistant function (interactive process based on SOP)**Refractive Index Setting: Automatic refractive index calculation function (LDR method: Light Intensity Distribution Reproduction Method)**makes setting the refractive index easy.**Real-Time Display: Particle size distribution/light intensity distribution simultaneous display**Diagnostics/Adjustments: Self-diagnostic function and cell check function**Recalculation of Particle Size Distribution: Batch recalculation of max. 200 distributions**Display of Particle Size Distribution Data: Displays overlay of max. 200 distributions**Display of Light Intensity Distribution: Displays overlay of max. 200 distributions**Statistical Data Processing: Max. 200 sets of data (also allows overlaying max. 200 data sets)**Time-Series Processing: Max. 200 sets of data**3-Dimensional Graphing: Max. 200 sets of data**Data Transfer via Clipboard: [Image Output]: Outputs entire data sheet or graph only.**[Text Output]: Outputs summary data, particle size distribution data, or light intensity distribution data.**Data Sorting: Sorts by file name, sample ID, sample number, or refractive index***Output Conditions***Particle Size (μm) Divisions: Fixed 51 or 101 divisions / User settable 51 divisions**Particle Amount (%) Divisions: Fixed 51 divisions / User settable 51 divisions**Distribution Basis: Count, length, area, or volume**Expression of Cumulative Distribution: Oversized or undersized**Expression of Frequency Distribution: q, q / Δ×, q / Δlog ×**Smoothing Levels: 10 levels**Distribution Function Fitting: Rosin-Rammler distribution, logarithmic Gaussian distribution**Data Shifting: ±10 levels**Report Function: Single data sets (6 templates), overlaid data (5 templates), statistical data, time-series data, or 3D data can be selected and output using batch processing***Data Analysis Functions***Scattering Angle Evaluation Function: Evaluates scattering characteristics within micro angle regions for samples such as optical films and sheets**Data Emulation Functions: Emulates measurement results from other instruments and measurement principles, series measurement results.**Mixture Data Simulation Function: Simulates particle size distributions using any mixture ratio of multiple particle size distributions**Data Connection Function: Combines two particle size distributions with different measurement ranges at any particle size point to**create a single particle size distribution**Continuous Measurement Function: Continuously measures changes in particle size distributions and particle diameters over time,**at intervals as short as one second, and saves the results.***PC Requirements***OS: Windows 7**CPU: Pentium Dual-Core 2.5GHz min.**MEMORY: 2GB min.**HDD: Min. 1 GB of free space required.**CD-ROM Drive: Required for software installation**USB Port**Display: SXGA (1280Å~1024 pixels) min**Printer: Must be compatible with operating system* |
| **3.** | **Parametrii de funcționare minim acceptați de beneficiar:***Measurement range:* * *With ultrasonic dispersing unit 17nm(0.017μm) to 2500μm*

*With mechanical dispersing unit: 17nm(0.017μm) to 400μm***Hardware Specifications****Measurement Unit: [230V]***One optical mersurement unit for full range. Will not be accepted system with split domain of measuring.* *Light source: Red Semiconductor laser (Wavelength 680 nm)**Light detector: Detector elements for UV semiconductor laser**Total 84 elements (78 forward, 1 side, 5 back)**System Compliance: Class 1 Laser Product, CE compliant**Required power supply: 230 VAC / 100 VA**Operating Environment: Temperature: 10 to 30°C, Humidity: 20 to 80 % (no condensation)***Ultrasonic Dispersing uint [230V]***Dispersing bath: Capacity: 100～280cm3**Sonicator: Frequency about 32 kHz, output about 40 W**Liquid Pump: Radial pump, maximum flow rate 2000cm3/min**Liquid Pump Material: Stainless (SUS 304, SUS 316), Tetrafluoroethylene (PTFE),**Perfluoroelastmor (FEP) or Kalrez, Thermoflon Pascal (inside)**Liquid Supply Pump: Diaphragm pump, maximum flow rate 750cm3/min**Liquid Supply Pump Material: Tetrafluoroethylene, polyvinyl dene fluoride**Flow Cell: Quartz glass* *Required power supply: 230 VAC / 200 VA**Operating Environment: Temperature: 10 to 30°C, Humidity: 20 to 80 % (no condensation)***Software Specifications****Measurement and Data Display Functions***Measurement of Particle Size Distribution: Allows measurements using measurement assistant function (interactive process based on SOP)**Refractive Index Setting: Automatic refractive index calculation function (LDR method: Light Intensity Distribution Reproduction Method)**makes setting the refractive index easy.**Real-Time Display: Particle size distribution/light intensity distribution simultaneous display**Diagnostics/Adjustments: Self-diagnostic function and cell check function**Recalculation of Particle Size Distribution: Batch recalculation of max. 200 distributions**Display of Particle Size Distribution Data: Displays overlay of max. 200 distributions**Display of Light Intensity Distribution: Displays overlay of max. 200 distributions**Statistical Data Processing: Max. 200 sets of data (also allows overlaying max. 200 data sets)**Time-Series Processing: Max. 200 sets of data**3-Dimensional Graphing: Max. 200 sets of data**Data Transfer via Clipboard: [Image Output]: Outputs entire data sheet or graph only.**[Text Output]: Outputs summary data, particle size distribution data, or light intensity distribution data.**Data Sorting: Sorts by file name, sample ID, sample number, or refractive index* |
| **4.** | **Piese de schimb: dacă sunt conform producătorului****Instrumente și accesorii: dacă sunt conform producătorului****Manuale: Da****Cerințe de întreținere: dacă sunt conform producătorului****Training: Da** |

**Notă**: Referirile la o anumită marcă și/sau sistem de operare, precum și specificațiile tehnice care indică o anumită origine, sursa, productie, un procedeu special, o marca de fabrica sau de comert, un brevet de inventie, o licentă de fabricatie, sunt mentionate doar pentru identificarea cu usurinta a tipului de produs si NU au ca efect favorizarea sau eliminarea anumitor operatori economici sau numitor produse și vor fi considerate ca avand mentiunea de «sau echivalent» Acestea specificatii vor fi considerate specificatii minimale din punct de vedere al performantei, indiferent de marca sau producator

Nume, prenume

Semnătură

29.03.2023