# *ANNEX II + III:* TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

**Contract title: Supply of laboratory equipment for the purposes and functioning of scientific laboratories of the Blue Growth Research centre at Trakya University in Lots**

**Lot 7 Supply of Multi-wave burning device, Raman spectroscopy, lyophilizer and portable depth sounder p 1 /…**

**Publication reference:** **CB005.3.12.001 - PP – Supply 7**

**Columns 1-2 should be completed by the contracting authority**

**Columns 3-4 should be completed by the tenderer**

**Column 5 is reserved for the evaluation committee**

Annex III - the contractor's technical offer

The tenderers are requested to complete the template on the next pages:

* Column 2 is completed by the contracting authority shows the required specifications (not to be modified by the tenderer),
* Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words ‘compliant’ or ‘yes’ are not sufficient)
* Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offeredspecifications.

| **1.**  **Item number** | **2.**  **Specifications required** | **3.**  **Specifications offered** | **4.**  **Notes, remarks,  ref to documentation** | **5.**  **Evaluation committee’s notes** |
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| **1** | **Multiwave burning device for ICP – 1 pcs.**  1.The device should be a closed system suitable for preparing clear samples for analysis with AAS, ICP and ICP / MS devices by analyzing all kinds of food, medicine and other biological samples with microwave.  2.The device must be powered by a 230 V 50 Hz power supply.  3. The microwave heating system power must be minimum 1000 Watt microwave output provided by magnetron.  4. The cavity volume of the device must be maximum 70 L.  5. The system must be able to hold a medium pressure rotor (Max. specifications 35-50 bar, 230°C) with minimum 12 vessel positions.  6. Instruction manuals must be give with the instrument.  7. The system must have a built-in, resistive control- and graphic display - touchscreen. The display must have at least a diagonal of 5’’. External controllers are not allowed.  8. The device must have an external temperature measurement system that measures the temperature from the below of the sample vessels.  9. The rotor with at least 12 vessels shall be supplied with the device.  10. Vessels to be supplied with the device have a volume of at least 50 ml. It shall be made of PTFE-TFM material and shall be working with venting system. It should be able to discharge excess pressure without allowing explosion.  11. The vessels with a volume of minimum 50 ml must be resistant to 35-50 Bar / 230 ° C pressure and temperature conditions.  12. The cover of the device must be locked by the device during the operation, allowing it to open when the rotor has cooled sufficiently.  13. The device should be guaranteed for at least 2 year against any manufacturing and assembly defects. Spare parts and service must be guaranteed for 10 years after the end of the warranty period. |  |  |  |
| **2** | **Raman Confocal Microscope – 1 pcs.**  1. The instrument shall be Confocal Raman Microscope System. An integrated confocal micro-Raman system including a confocal microscope, transfer and filtering optics, spectrograph equipped with gratings, detector, lasers, motorized xyz stage and the relevant software and computer platforms must be supplied.  2. The instrument should include a flat field Czerny-Turner scanning or lens based spectrograph, providing high quality slit image flat over at least 1 inch and then should integrate an air cooled Open Electrode or back/front illuminated deep Deeplition type CCD detector (minimum 1000x200 pixels) sensitive from at least 400 to 1050nm.  3. The instrument should allow to measure Photoluminescence with high spectral resolution  4. The system should have 4 grating options (600gr, 1200gr, 1800, 2400gr) manual or fully automated and computer controlled, to guarantee a low and a high spectral resolution capability at any proposed wavelength. At least 2 grating should be supplied with the system. The system must be configured with Rayleigh filters.  5. The instrument must have a Class 1 or 3B microscope enclosure.  6. For optimum spectral performance, the instrument should have a focal length of at least 200 mm and feature a spectral dispersion better than 1cm-1 per pixel (26 microns) for red excitation wavelength with 1800gr/mm grating. Spectral resolution should be <1,2cm-1 FWHM at 785 nm  7. CCD must be at least 1024x256 pixels / 1 inch width. The CCD chip must be used to acquire the spectral data, in both stationary and continuous scanning modes, without spectral distortion.  8. The detector must provide a quantum efficiency (QE) that is at least 30% from 500nm to 800nm. CCD should be deep cooled to at least -60°C, to provide low noise performance.Detector linearity should be better than 99%.  9. The instrument should include a true confocal microscope, which must be fully and permanently integrated in the main frame of the system and directly coupled to spectrometer to ensure highest spatial resolution, sensitivity and stability. Or system should have fiber based confocal feature.  10. For non fiber based confocal systems, Motorized confocal pinhole should be adjustable and computer controlled.  11. At 532nm, the system must provide a lateral confocal resolution of better than one micron and an axial confocal resolution better than 2 microns.  12. The microcope should include 5x, 10x, 20x and 100x objectives and optical coupling from microscope to spectrometer maximized for best spatial resolution. System optical coupling should be optimized for X100. The microscope must be equipped with a high definition USB colour camera to visualise the sample under white light illumination and the laser spot simultaneously. For maximum sensitivity the filters must operate in injection/rejection mode.  13. Instrument should offer access to very low wavenumber spectral regions below 150 cm-1 by the use of Edge filters mounted on motorized or manuel kinematic mounts for quick wavelength change without any alignment.  14. The system calibration must be performed as fully automatic via the integrated or external Si reference sample in the system.  15. The instrument should be equipped with a motorized XYZ stage. Should have 100 nm or better resolution at X-Y and Z axis. The standard system will have the ability to perform single point analysis, multi point analysis, mapping capabilities.  16. 532 nm laser and allfilters should be included. At least three lasers should connect to system at the same time. The system shall be suitable for AFM upgrade.  17. The software must allow the visualization and mathematical manipulation of hyperspectral images and be possible to generate images of band intensity, position and width.  18. The system should allow particle morphological analysis based on video image and should allow localization and automated runaway characterization of the particles with Raman/PL acquisitio  19. The system must include a spectral identification function software permitting the creation of spectra libraries and the search of spectra for identification.  20. At least 1500 spectra must be included in the library, dedicated to different sample families. The system should have search and match, particul shape and size analysis, data evolutiation and processing software. With the system all original software CDs and license certificates must be given. For interpreting the results, the user can install the software to a compatible featured computer. The software should have a at least 2 or no licence limit for this aim.  21. All necessary equipments must be given with the system so to maintain system performance.  22. User trainings must be performed free of charge.After the training, a training certificate must be given to the participants.  The device should be guaranteed for at least 2 year against any manufacturing and assembly defects. Spare parts and service must be guaranteed for 10 years after the end of the warranty period. |  |  |  |
| **3** | **Lyophilizer – 1 pcs.**  1. The device must be desktop type.  2. It should contain 1 compressor  3. Vacuum pump should be double-stage, the removal of moisture in the environment should be gas ballast to keep the oil condensation.  4. Vacuum pump is rotary type and its capacity should not be less than 6 m3 per hour.  5. It should be in a single unit with refrigerant compressor and vacuum pump.  6. There should be automatic pressure control.  7. There should be an automatic pressure control and the tray temperatures should be able to be programmed automatically.  8. There should be automatic vacuum control for better results and faster freeze drying.  9. It should provide cooling down to -55 oC.  10. Shelves should be able to be cooled to -55 degrees and heated up to + 70C.  11. The device must have an automatic defrosting defrost feature, and it must be able to defrost and clean quickly and easily.  12. Exhaust filter system must be available.  13. The device must have a software and the device must be able to connect to the computer through this software.  14. The vacuum and condenser temperature values should be read from the screen from the software program of the device, and information about the components of the system such as valves, motors, indicators should be obtained from the indicator.  15. 3-shelf heated chamber accessory should be given with the device.  The device should be guaranteed for at least 2 years against any manufacturing and assembly defects. Spare parts and service must be guaranteed for 10 years after the end of the warranty period. |  |  |  |
| **4** | **Portable Depth Sounder – 1 pcs.**  1.Get accurate depth from boat/jetty/dingy etc. with one flick of the switch 0.6 to 80 meters depth.  2. Waterproof to 50m (150 feet) depth and anti impact.  3.Frequency 200kHz (Beam Angle:24°)  4.Depth scale 0.6-80m (1.8-250 feet)  5.DC9V (Dry Cell 006P) |  |  |  |
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