

Date: 04/10/2021

CORRIGENDUM /ADDENDUM - 01

1. It is notified to all concerned parties that with reference to our **Tender No. IITH/CHE/D SHEE/2021/O/T378** dated: 08-09-2021_ the following changes are being made w.r.t. the Tender: -

Description	Existing	Amended To
Page no: 23,	Chapter 4	Chapter - 4 A (Details are below as per Chapter - 4A)
Bid Submission Close Date	30/09/2021 by 11:00 Hrs	25/10/2021 by 11:00 Hrs
Opening of Technical Bids	30/09/2021 by 11:00 Hrs	25/10/2021 by 11:10 Hrs

CHAPTER - 4 A

Revised Specifications

Confocal Raman Spectrometer

The Confocal Raman Spectrometer should have true confocal microscope, transfer and filtering optics, an achromatic spectrograph equipped with multiple grating, multichannel detector, exciting lasers, power meter. The Raman spectrometer should be capable of characterizing various types of materials such as ceramic, semiconductor, minerals, polymer, biomaterials, carbon materials etc. for wide range of applications. The supplied Confocal Raman Spectrometer should be upgradable to advanced studies such as Photoluminescence, SERS, TERS, 2D and 3D imaging, fast confocal Raman mapping.

- Spectrograph:** High efficiency focal length achromatic spectrograph equipped with appropriate optics to work over a large spectral range from UV upto NIR
- Spectral Range:** 200 to 1600 nm
- Spectral resolution:** 0.4 cm^{-1} / pixel at 532 nm with a 1800 gr/mm (or higher) and 1.5 cm^{-1} /pixel at 340 nm with 1800 gr/mm grating (or higher **or** 0.5 cm^{-1} (FWHM)1800 gr/mm (or higher and 3 cm^{-1} (FWHM) 340nm with 1800gr/mm grating (or better)
- Spatial resolution:** Truly confocal microscope, Laser diameter less than 1 micron at 532 or 632 nm and axial confocal performance better than 2 micron.
- Gratings:** Holographic 1800 (or higher), and 1200/600 gr/mm mounted on a motorized turret driven by software, to vary spectral resolution. The gratings should be quickly and easily interchanged without realignment using supplied software.
- Density Filter:** Motorized neutral density filter for varying the laser intensity on sample (0.01 to 100%, minimum 9 no. and higher). Instead of density filter, if any other technology is available to reduce the laser intensity on sample with equal and better performance than density filter, then please mention in detail with supporting documents.

7. **Filters:** A set of Edge, interference, and spatial filters together with required accessories for the below mentioned laser should be supplied. The filters should be exchangeable automatically through supplied data acquisition software.
8. **Research grade True Confocal Microscope with high stability**
 - Removable bottom stage or Free space microscope for large specimen size and biological application.
 - A revolver equipped with 3 plan-achromatic objective-lenses
 - Reflected light illumination and transmitted light illumination with brightness control.
 - 10x, 50x, and 100x objective lenses.
 - Binocular head with eyepieces for visualization by reflection
9. **Video camera:** High definition colour video camera (3MP or higher) for viewing sample under white light illumination and simultaneously visualize the laser spot. A video card for digitization of the image of the sample should be provided. Automated switching between visualization and Raman measurement
10. **XYZ mapping stage:** Automated XYZ motorized sample stage with positioning joystick, controller, computer interface card, drive electronic and software to allow scatter, line, and area mapping and confocal depth profiling. Minimum Step size 0.1 micron or less in all axis.
11. **Lasers:** Suitable external platform and transfer optics system should be provided to accommodate multiple lasers. Raman measurement 50 cm⁻¹ onwards from laser line except UV.
 - 532 nm, 100 mW laser 1 MHz narrow band width with required edge and bandpass filters.
12. The supplied laser should have minimum 3000 hrs or more of operation capability as warranty from the date of installation.
13. **Detector:**
A multi-channel, high sensitivity and ultra-low noise air/Peltier cooled (-60°C) CCD detector.
 - 1024×256 pixel
 - Pixel size: 26 x 26 micron
 - Spectral range: 200 to 1050 nm
 - Quantum efficiency > 30 % between 500 to 800 nm
14. Power meter working from 400 to 1100 nm including density filters.
15. Automation of laser switching for at least two excitation wavelengths except UV
16. Laser safe microscope of class 1 enclosure should be quoted to avoid laser exposure to the operator/users and interference of ambient light during data acquisition. If the quoted system is laser radiation shield and free from ambient light interference, then such safety enclosure is not required. The supplier needs to furnish the proper justification for not quoting the safety enclosure.
17. Macro sampling kit for microscope
 - Optical interface kit
 - Liquid sampling accessories
 - Solid sampling accessories
 - Powder sampling accessories
18. A suitable online UPS with minimum 30 min power backup of complete Raman system.
19. The supplied data acquisition software should be windows compatible and capable of controlling of the instrument, data acquisition, and data manipulation. A data acquisition computer with HD display and latest hardware configuration along with a laser printer should be supplied.

Optional items

1. **Future Upgrade:** The Raman microscope system can be easily coupled with AFM/NSOM and can be configured for SERS and TERS measurements. Required accessories should be quoted **separately as an optional item**. Available list of compatible AFM system should be provided.
2. **Optional Lasers:** 325 nm (15mW or higher), 785 nm (100mW or higher), He-Ne (633nm, 15W), 488nm (50mW or higher)
3. **Inverted microscope** for life science application
4. **Optional detectors:** A) LN₂ cooled InGaAs diode array detector, B) EMCCD detector for ultra-fast confocal imaging and mapping for polymer and biomaterials
5. **High Temperature controlled stage** form **Linkam Scientific Instruments, U.K.**
 - TS1500V (ambient to 1500°C) temperature-controlled stage with sampling kit
 - T95 System controller
 - Link Pad and Linksys 32 software
 - Cooling water circulation unit
 - Catalytic cell reactor, CCR1000 (ambient to 1000°C) with sampling kit
 - Objective lenses and condenser lenses for both the temperature-controlled stage
 - Stage clamp compatible with the microscope for both the stages.
 - Connecting cable and hoses

Terms and conditions for instruments

1. The supplier must provide installation, commission, and two training session (first training session during installation and another training session any time after six months from the date of installation) of minimum 2 days each for group of users from operating the instrument to complete structure determination/solution, general maintenance at site without any additional cost with supply of all the relevant manuals and documents in printed format.
 2. Warranty for the Raman system, all accessories and spare parts (except supplied laser) should be for min of **3 years or more from the date of installation. The supplied laser should have minimum 3000 hrs or more of operation capability as warranty from the date of installation.**
 3. The supplier must produce detailed lists with contact details of Indian users including Central Govt Universities, Govt Research Organization/Institutes, NITs and IITs/IISC/IISER etc.
 4. The supplier should submit relevant documents as proof (e.g., Purchase Order) that they have supplied at least 3 systems in the last 5 years in India. The performance certificate from Indian users (at least 3) should be attached along with the technical bid.
 5. The supplier must demonstrate that they have appropriate set-up and capability to provide after-sales service effectively in India for prompt service support along with number of service engineers specially trained on the offered system.
 6. Necessary pre-installation advice and site preparation requirements should be sent along with the technical bid.
2. All other terms and conditions of the tender remain unchanged. Bidders, **who have already submitted their bids prior to issue of this corrigendum need to submit again.**