

SECTION - C

TECHNICAL SPECIFICATIONS OF STORES AND DRAWINGS.

Technical Specifications for Supply of CONFOCAL MODULAR RAMAN SPECTROMETER

CONFOCAL MODULAR RAMAN SPECTROMETER SPECIFICATIONS

1. SPECTROMETER:

- Design : Czerny-Turner or equivalent
- Type : Imaging (Flat Field)
- Focal Length : >300mm
- F Number : >4
- Spectral Range : $\leq 150 \text{ cm}^{-1}$ to $\geq 4000 \text{ cm}^{-1}$
- Resolution : $< 1.4 \text{ cm}^{-1}$
- Turret : Triple Grating Turret
- No. of Gratings : Two 600gr/mm and 1800gr/mm to cover desired range and resolution.
- Entrance : Motorized entrance slit varying 0-7mm in few micron steps
- Exit : Array adapter for CCD detector
- Interface : USB

2. DETECTOR:

- Grade : Scientific Spectroscopy grade
- CCD Format : 1024 x 256/512
- Pixel size : >25 micron X 25 micron
- Cooling : Deep TE Cooled to -60°C
- Dark Current : 0.0052 e⁻/pixel/sec (Typical)
- Quantum Efficiency : >30% between 500 to 850nm

3. LASER:

- Wavelength : 532nm
- Power : $\geq 100\text{mW}$
- Type : SLM DPSS
- Coupler : Fiber coupler and suitable adapter
- Input Power: 220 V , 50 Hz AC

4. MICROSCOPE:

- Complete Research grade confocal microscope with 2 position motorised white light illumination
- PC controlled

- Turret equipped with two objectives 5X and 10X
 - A high definition USB color camera should be provided to simultaneously visualise the sample under white light illumination and the laser spot using the software.
 - Set of 2 optical fibres 50 μm and 100 μm with Length ≥ 5 m should be provided.
 - Confocal Resolution: ≤ 500 nm
5. **SOFTWARE:** Suitable software for data acquisition and analysis.
6. **OPTIONAL ITEM:** Suitable Edge/Notch Filter for 532nm laser should be quoted as optional items.
7. **Warranty of minimum one year. Warranty /guarantee period will start only after the successful installation and acceptance of the system at IPR.**
8. **Kindly quote for Annual maintenance charges (AMC) after expiry of warranty period as an optional quote.**

Note:

- (i) **The vendor shall supply the recorded Raman spectra of some standard samples (sulphur/carbon tetrachloride/water/ cyclohexane/graphite) before despatch of the system for approval from IPR.**
- (ii) **The system will be accepted only after successful installation and performance check of specifications with standard Raman samples (sulphur/carbon tetrachloride/water/cyclohexane/graphite) at IPR.**

COMPLIANCE TABLE

Sr. No.	IPR Specifications	Vendor Specifications	Remarks
1	<p>Spectrometer</p> <ul style="list-style-type: none"> • Design : Czerny-Turner or equivalent • Type : Imaging (Flat Field) • Focal Length : >300mm • F Number : >4 • Spectral Range: $\leq 150 \text{ cm}^{-1}$ to $\geq 4000 \text{ cm}^{-1}$ • Resolution : $<1.4 \text{ cm}^{-1}$ • Turret : Triple Grating Turret • No. of Gratings: Two 600gr/mm and 1800gr/mm to cover desired range and resolution. • Entrance : Motorized entrance slit varying 0-≥ 7mm in few micron steps • Exit : Suitable Array adapter for CCD detector • Interface : USB 		
2	<p>Detector:</p> <ul style="list-style-type: none"> • Grade : Scientific Spectroscopy grade • CCD Format : 1024 x 256/512 • Pixel size : >25 micron X 25 micron • Cooling : Deep TE Cooled to $<-50^{\circ}\text{C}$ • Dark Current : $\sim 0.005 \text{ e}^{-}/\text{pixel}/\text{sec}$ (Typical) • Quantum Efficiency: >30% between 500 to 850nm 		
3	<p>LASER:</p> <ul style="list-style-type: none"> • Wavelength : 532nm • Power : $\geq 100\text{mW}$ • Type : SLM DPSS • Coupler: Fiber coupler and suitable adapter • Input Power : 230 V , 50 Hz AC 		
4	<p>Microscope</p> <ul style="list-style-type: none"> • Complete Research grade confocal microscope with 2 position motorised white light illumination • PC controlled • Turret equipped with two objectives 5X and 10X • A high definition USB color camera should be provided to simultaneously visualise the sample under white light illumination and the laser spot using the software. • Set of 2 optical fibres 50 μm and 100 μm with Length $\geq 5 \text{ m}$ should be provided. • Confocal Resolution: $\leq 500 \text{ nm}$ 		
5	<p>Software Suitable software for data acquisition and data analysis</p>		

Authorized Signatory
 Official seal
 Date :-