

## Technical specifications of Micro-photoluminescence and Raman spectrometer

<b>I</b>	<b>Bidder Eligibility Condition</b>	<b>Comply /Not Comply</b>	<b>Ref. Page No.</b>
1	The bidder/OEM should have supplied at least 3 similar items to IITs, NITs, IISERs, CSIR Labs or other Govt. organizations and Industry in the last 5 years, PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims submitted by the bidder and the feedback from the previous customers will be part of technical evaluation.		

The system should be fully integrated with Micro-Raman Spectrometer with high stability open space research grade confocal microscope with a large (at least 800 mm) focal length reflective optics achromatic spectrograph. Instead of relying on fibre, the system should be mirror-based and directly connected.

<b><u>II</u></b>	<b>Feature</b>	<b>Requirement</b>	<b>Comply / Not Comply</b>	<b>Ref. Page No.</b>
<b>1</b>	Spectrometer: Raman range  Spectral Range	50 cm <sup>-1</sup> to 4000 cm <sup>-1</sup> or better for 532 nm, 633 nm and 785 nm lasers  350 cm <sup>-1</sup> to 4000 cm <sup>-1</sup> or better for 266 nm laser  200 nm to 2100 nm		
<b>2</b>	Spectral resolution	≤ 0.7 cm <sup>-1</sup> or better for 532 nm, 633 nm and 785 nm lasers.  < 3.1 cm <sup>-1</sup> or better for 266 nm laser		
3	Grating	Holographic 2400 l/mm (for UV), 1800 l/mm and 600 l/mm (visible).		
<b>4</b>	Spatial Resolution (100x objective in the visible range)	Lateral resolution 0.6 micron or better  Axial resolution 1.6 microns or better		

<p><b>5</b></p>	<p>Lasers (Power should be adjusted with natural density filters)</p> <p>(Computer controlled appropriate arrangement for optical system alignment)</p>	<p>266 nm with an output power of 50 mW or more.</p> <p>532 nm with an output power of 100 mW or more</p> <p>633 nm He-Ne laser with output power of 15 mW or more</p> <p>785 nm with output power of 100 mW or more</p>		
<p><b>6</b></p>	<p><b>Confocal Microscope</b></p> <p>a. Revolver equipped with plan-achromatic objectives</p> <p>a. Video camera</p> <p>b. Confocal coupling optics</p> <p>c. Microscope stage (Automated including joy</p>	<p>5x visible, NA = 0.1, WD = 19.6 mm</p> <p>10x visible, NA = 0.25, WD = 10.6 mm</p> <p>100x visible, NA = 0.9, WD = 0.21 mm</p> <p>15x UVB objective, NA = 0.32, WD = 8.5 mm</p> <p>40x UVB objective, NA = 0.50, WD = 1 mm</p> <p>50x LWD visible objective, NA = 0.50 WD = 10.6 mm</p> <p>Sample under white light illumination and to concurrently see the laser point, a high-quality colour video camera should be offered.</p> <p>Confocal pinhole that should be continually adjusted and controlled by software between several microns and 1 mm.</p> <p>XYZ stage should be provided with travel range for X = 75 mm and Y = 50 mm or better</p> <p>XY specifications: repeatability <math>\leq 1 \mu\text{m}</math></p>		

	stick and computer controlled)  d. CCD detector	or better; Accuracy $\pm 3 \mu\text{m}$ or better; Resolution (minimum step size) =10nm or better.  Z specifications: resolution (minimum step size) = 0.01 micron or better.  Spectral Range: 200 nm to 1050 nm or better  Cooling Type: Peltier cooled to -60°C or better  Pixel Format: Minimum 1024x256 or better  Pixel Size: 26x26 microns or better  Interface: USB		
<b>7</b>	Variable Temperature Stage	-196 °C to 600 °C or better		
<b>8</b>	Power meter and PL filters	For all the laser wavelengths as mentioned above.		
<b>9</b>	Computer and Software	The system must come with a factory-installed computer.  Data collection and analysis software should include particle size calculation and statistical analysis		
<b>10</b>	Warranty	Three-years on all components & subcomponent should be provided to the entire tender configuration.		

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the Above points with document proof as required. Failing which bidders will be technically disqualified)