



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

(PR No. 1000037957)

(RfxNo.6100001665)

Technical Specifications for Visible Spectrometer System (Qty: 1 Nos.)

Sr.No	Specification	Compliance (Yes/No)
I	<p>The combined low temperature spectrometer system will be a part of an existing time-resolved micro-spectroscopy setup (therefore should be compatible for integration with existing Pico Quant Micro Time 200 equipment). The spectrometer should have the following three major components –</p> <ol style="list-style-type: none">1) Imaging spectrometer with sensitive detector,2) Cryostat for imaging and spectroscopy, and3) Coupling accessories of the above two components and to existing microscopy setup. These should be supplied, integrated and installed as a single system by the vendor. <p>The complete system should have the following specifications:</p> <ol style="list-style-type: none">1. Spectrometer Focal length: 190 - 200 mm with aperture: F/3.5 - 42. One input slit with meter control from 10 μm to 2.5mm; One exit port for detector3. Motorized focusing mirror with software control should be present4. Motorized dual grating turret with two gratings a) 300 lines/mm blazed at 550nm and b) 600 lines/mm blazed at 650nm5. Output pre-coupled to TE cooled (-80°C) EMCCD detector with Back Illuminated CCD sensor (anti fringe) having > 80% photon detection quantum efficiency between 450 and 750 nm.6. Detector active pixels: 1600 x 200 with pixel size: 16 x 16 μm; Dark current, e-/pixel/sec @ max cooling: 0.0001 or better; Software control EM gain should be present.7. Coupling accessories to interface with existing Pico Quant Micro Time 200 should have all necessary optics, flanges, adapters, fibers etc. required to get the signal from existing fluorescence setup into the spectrometer with minimal light loss.	

	<ol style="list-style-type: none"> 8. Liquid Nitrogen continuous flow cryostat with temperature controller (precision <10 mK) for imaging using the existing inverted microscope. The configuration for the cryostat should be horizontal which can be mounted and bolted on the microscope stage. The temperature range should be 77K-500K with ± 1K. 9. Cryostat should allow measurement of samples up to Sample 20 mm (dia) x 2 mm (height). Working distance should be 2 mm or less with vibration of < 0.1 microns and thermal drift of < 1 micron/hour. Closed loop control for temperature ramping should be present. 10. An appropriate turbo-drag pump (35 litres N₂/s) with gauge should be included so as to achieve a base pressure of < 1×10^{-7} mbar, along with gauge cables, clamps, O-rings, adapters and vacuum fittings. Controller should have a pressure display. 11. Liquid N₂ transfer siphon, dewar (5 litre capacity) and gas flow control should be included. 12. Appropriate long working distance objective lenses compatible with Olympus IX73 microscope should be included: NA 0.6-0.8, 40 and/or 60X 13. Interface USB for data acquisition from detector and spectrometer control. Latest software to be provided to operate the setup. All accessory, manuals, software necessary should be provided for operation as per Indian power standards. 14. The spectrometer should be installed with existing setup by supplier. 15. Warranty of 1 year from the date of installation. 	
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