



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

Ref No.(PR No.) 1000051564

(Rfx No. 6100002551)

Technical Specifications: (Qty : 01)

Photoluminescence spectrometer with lifetime measurements

Compact integrated UV-VIS fluorescence spectrometer for steady-state and Time-resolved measurement and other accessories in solution and solid-state sample, powder sample Holder and thin film holder as indicated below-

Sr. No.	Item Description	Detailed Technical Specification	Technical Compliance (Yes/ No)	Additional Information (if any)
1	Signal-to-Noise Ratio	$\geq 13,000:1$ (FSD) or better at 397 nm, 5-nm bandpass, 1-s integration time, background noise first standard deviation at 450 nm. Double-distilled, de-ionized Sensitivity must be measured with no optical filter, no smoothing, no repeat emission scan.		
2	Excitation Source	a)150 W or high-power Ozone free Xe CW lamp, Light collection and focusing by off-axis mirror for maximum efficiency at all wavelengths. b) 7 W or higher power Xenon pulse source for phosphorescence decay measurements.		
3	Excitation: Monochromator	Plane grating Czerny-Turner design, maintains focus at all wavelengths and		

		minimum stray light. Focal length 180mm or more, excitation Grating: 1200 lines/mm blazed between 300-350 nm. resolution 0.3 nm or better, accuracy ± 0.5 nm or better, range 200-850nm or better, With variable spectral band pass 0 to 29nm or better. Automated Filter wheel for Second order removal.		
4	Emission Monochromator	Plane grating Czerny-Turner design with double faring turret, maintains focus at all wavelengths and minimum stray light. Focal length 180mm or more focal length, emission Grating: 1200 lines/mm blazed at 500 nm; resolution 0.3 nm or better, accuracy ± 0.5 nm or better, range 200-850 nm or better, With variable spectral band pass 0 to 29 nm or better. Automated Filter wheel for Second order removal.		
5	Scan Speed	80 nm/sec or better		
6	Integration Time	1ms-160sec or better		
7	Detectors	PMT in TE cooled housing capable measuring signal 200-870 nm, Reference Detector: UV enhanced Silicon Photodiode for Excitation correction, Transmission Detector: Silicon photodiode for Absorbance measurement.		
8	Sample Compartment	Liquid sample holder and Front face solid sample holder for thin films, powders, pellets, microscopic slides and		

		external adjustment for signal optimization.		
9	Filters	Set of eight long pass filters wavelength covering 475nm, 495nm, 515nm, 530nm, 550nm, 570nm, 590nm and 610 nm		
10	Phosphorescence Lifetime Capability	Measurement of phosphorescence decays in the time range < 10 μ s to 10 s		
11	TCSPC measurements	Fluorescence lifetime measurements capabilities in the time range of picoseconds to microseconds. All the related hardware and software accessories must be included.		
12	TCSPC source	1. Pulsed Laser with peak WL 375 ± 10 nm, repetition rate 25MHz or better. 2. Pulsed Laser with peak WL 405 ± 10 nm, repetition rate 25MHz or better.		
13	PLQY upgradation	Integrating sphere (minimum 81 mm diameter) and complete set of related items for measuring absolute PLQY of samples in solid/thin film/solution.		
14	Quartz cuvette	~ 3.5ml Quartz cell 1cm x 1 cm open top with cap (Qty-2)		
15	Computer hardware and software	Suitable computer workstations, and all interfacing hardware and software for instrument control, data acquisition, data storage and data processing for steady state and time resolved. license for data analysis software.		
16	Warranty of the system	one-year warranty on the entire system.		

17	One software license key for operating the software in another computer independently.			
18	Installation and Demo is required without additional cost. PLQY demo has to be shown with a known dye like rhodamine			