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| | **INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**<br>**MATERIALS MANAGEMENT DIVISION**<br>**Powai, Mumbai 400076.** |

**PR No. 1000051563** **Rfx No. 6100002541**

## Spectrofluorimeter with lifetime measurements – 1 No.
## Technical Specifications

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) |
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| 1 | **Signal-to-Noise Ratio** | ≥ 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.<br>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 | | |

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| | | 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<br>475nm, 495nm, 515nm, 530nm, 550nm, 570nm, 590nm and 610 nm | | |
| 10 | **Phosphorescence Lifetime Capability** | Measurement of phosphorescence decays in the time range < 10 µs to 10 s | | |

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| 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 LED with peak WL 340 ± 10 nm, repetition<br>2. Pulsed Laser with peak WL 375 ± 10 nm, repetition rate 25MHz or better.<br>3. 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 additional software license key for operating the software in another computer independently**. | | | |
| 18 | **Installation and student training as required (at no additional cost).** | | | |