

Date: 19-08-2024

CORRIGENDUM

Tender Ref No	IITH/CHY/VSIVA/2024/G/T028
Tender ID	2024_IITH_818113_1
Name of Tender	Spectrofluorometer
Reason of Corrigendum	1.Changes in Item specifications. 2. Changes in Bid submission end date & Bid opening date

Description	Existing	Amended To
1.Changes in Item specifications	As per chapter-4 of tender no. IITH/CHY/VSIVA/2024/G/T028 dt. 25.07.2024	As per the attached Annexure-01
2. Changes in Bid submission end date & Bid opening date	Bid Submission End Date: 22-Aug-2024 11:00 AM Bid Opening Date: 23-Aug-2024 11:00 AM	Bid Submission End Date: 30-Aug-2024 11:00 AM Bid Opening Date: 31-Aug-2024 11:00 AM

Note: All other terms and conditions of the tender remain unchanged. Bidders, who have already submitted their bids prior to issue of this corrigendum need to submit again.

Annexure-01

Item: Spectrofluorometer:

Technical specification for spectrofluorometer (fluorescence spectrometer) and accessories.

Fully Computer controlled fluorescence spectrometer for UV-Vis NIR - steady state, phosphorescence, lifetime measurements with the following configuration: (specifically “Modular fluorescence spectrometer system for acquiring steady-state excitation and emission spectra in the UV-VIS spectral range with single photon counting sensitivity. The standard instrument configuration must have a guaranteed sensitivity of $>20,000:1$ for the Signal-to-Noise Ratio of the water Raman signal measured with excitation at 350 nm, emission at 397 nm, with a 1-second integration time, and 5 nm spectral bandwidth”).

The details are

Excitation Source:

- 450 W CW xenon lamp with integrated power supply for steady-state PL measurements, phosphorescence, and phosphorescence decay.
- Display of power, voltage, current, and time elapsed (Display with lamp parameter and usage in hours must be integrated with Lamp housing)

Excitation Monochromator-

- Single monochromator in Czerny Turner configuration with suitable grating optimized for UV range around 300-400 nm with focal length 300 mm or better.
- Minimum step 0.01 nm.
- Computer-controlled slits, exchangeable triple grating turret enabling software selection of gratings.
- Computer-controlled swing mirror to select between the three entrance slits
- computer-controlled filter wheel for higher-order removal
- stray light suppression greater than $1:10^5$.
- Gratings with minimum 1200 grooves/mm
- Minimum step 0.01 nm

Emission Monochromator

- Single emission monochromator in Czerny Turner configuration with suitable grating optimized for a visible range around 400-500 nm with focal length 300 mm or better.

- Minimum step 0.01 nm.
- Computer-controlled slits, swing mirror, exchangeable triple grating turret enabling software selection of gratings.
- computer-controlled filter wheel for higher-order removal
- Stray light suppression greater than $1:10^5$.
- Computer-controlled exchangeable triple grating turrets (two off) with up to three gratings each
- Computer-controlled slits
- Computer-controlled swing mirror to select between the three exit Slits

Sample chamber & Solid sample holder-

- Single cuvette holder
- Filter slots provided for holding 50mm square filters as standard.
- Suitable focusing optics lens/mirror based.
- T-geometry should be available for additional emission monochromator.
- Interlocks to operate detector protecting shutter.
- Computer-controlled signal level attenuator
- Front facing solid sample holder for powders & thin films.
- Solid sample holder for powders & thin films. It should be designed for viewing front-face fluorescence of thin films, powders, pellets, paper, fibers, or microscopic slides. Variable alignment angle
- At least 02 No of Standard quartz cuvettes with cap (10mm path length)
- Sample holder for (i) cuvette (ii) solid sample without & with integrating sphere.
- At least 02 No of Quartz micro cuvettes should be provided.
- Large Sample Compartment with top, side, and bottom access
- Interlocks to operate detector protecting Shutter
- Large Sample Compartment with single cuvette holder temperature adjustable by water/coolant circulation, fitted with an integrated probe for sample temperature monitoring by spectrometer operating software.
- Front face detection suitable for measurements of powders and film/slide samples including all the sample holders.
- Filters for solid sample analysis
- Color Filters should be included (7 nos. ND and color filters should be included with wavelengths 330 nm, 395 nm, 455 nm, 495 nm, 550 nm, 590nm & 645nm), All filters are of the size of 50 mm x 50 mm and fit into the filter holders.

Detector-

- Suitable PMT detector in cooled housing.

- Additional channel
- Detectors should have a response width: <600 ps.
- Spectral coverage is 200 nm to 870 nm or better, with low dark count <100 cps at -20 degree or better.
- Sensitivity: S/N ratio of minimum 20000:1 (FSD Method) for Water Raman Signal (Ex: 350 nm, Em: 397 nm; BP: 5 nm)
- Reference Photodiode detector should be included
- Suitable color filter set should be included

Electroluminescence & lifetime measurements: (steady-state and MCS EL measurement module should be included. All relevant electronic accessories and cables should be included with control software with SMU (- V-Ranges: 20mV- 200V - I-Ranges: 10nA - 1A)

- Sample holder for Electro-Luminescence samples.
- Programmable pulse generator for the generation of voltage pulses for electroluminescence lifetime measurements in MCS mode.
- Suitable for measuring electroluminescence lifetimes 100 ns or greater.
- 20 MHz Repetition Rate or better.
- Variable Pulse Width: 16 ns to 999.99 s or better.
- Designed for samples with minimum dimensions 20 mm x 20 mm and maximum thickness of 5 mm, which are held in a frame by a spring-loaded plunger

Software-

- All the necessary hardware and timing electronics to measure Steady-state fluorescence spectra to full capabilities must be provided.
- Comprehensive fluorescence spectrometer control, performance monitoring, spectral and lifetime data acquisition and data fitting and analysis.
- EL measurement software – for both steady state and MCS
- Software should also have facilities like spectral and fluorescence/phosphorescence lifetime acquisition, kinetic measurements, time-resolved excitation and emission spectra (TRES) and slicing of TRES data, data handling routines (normalization, scaling, arithmetic, integration, differentiation, smooth etc.), routines for quantum yield, reflectance and absorption measurements, chromaticity and luminance calculation and presentation etc.

Quartz Fluorescence Cuvette:

- 3ml Quartz fluorescence cell 1cm x 1 cm (Qty-4)

Computer-

- Suitable computer/workstation with all the interfacing hardware and pre-loaded software to operate the system with full capabilities and the license key must be provided.

One software license key for operating the software in another computer independently.

Warranty-one year comprehensive warranty on the full system

Additional options: These items are quoted separately along with the main quote

Phosphorescence:

- Pulsed high-energy xenon lamp for phosphorescence (optical pulse width 1.5 μ s to 2.5 μ s, - average power up to 60 W, - repetition rate: 0.1 Hz - 100 Hz, -Photomultiplier gating circuitry)

Quantum Yield-

- Integrating sphere with minimum 120mm inner diameter for absolute PLQY measurements.
- Sphere must fit inside the sample chamber.
- **The sphere must feature a motorised sample loading mechanism which allows easy sample exchange**
- Two separate 3ml cuvette (10mm path length) with stopper and all other holders, reference plug, powder tray and all other related accessories must be provided as sphere accessories for complete measurements of absolute PLQY for both solid/thinfilm and liquid samples.
- Holders for both direct and indirect excitation sample should be provided

NIR – spectral measurement:

InGaAs detector with Integrated Lock-In for Steady-state measurement

Spectral Range: 870 nm - 1650 nm or better

AND/OR

NIR PMT in Liquid Nitrogen Cooled Housing for steady state and lifetime measurement

- spectral range: 500 nm - 1700 nm or better

- detector response width: 800 ps

- dark count rate: 200,000 cps guaranteed, 70,000 cps typical, both at -80 °C

Upgradability: The system must be capable of future field upgradation for NIR spectral measurements, TCSPC time-resolved experiment in the range of UV-VIS-NIR, Low-high temperature experiment facility with cryostat down to 10K with He or 77K-500K with Liq N₂

Eligibility: The vendor must have supplied 3-5 nos of Instruments to the centrally funded institutes or equivalent (like IITs, NITs, CSIR Labs etc) in last five years.