File Ref. No. PUR/IICT/DMS/1338/RE/22-23 **Dt: 17-10-2023**

CPPP Tender ID : 2023_CSIR_170190_1

Minutes of Pre-Bid Conference (PBC) held on 17-10-2023 for proposed procurement of "Fluorescence Spectrophotometer".

As scheduled Pre-Bid conference (**PBC**) has been conducted on 17-10-2023 for proposed procurement of **Fluorescence Spectrophotometer.**

Chairpersons / Members of the Technical Sub Committee (TSC) present during PBC including domain expertspresent during PBC:-

1. Dr. PratyayBasak, Chairperson
2. Dr.G. Jithender Reddy, Member
3. Sri. D. Venkateswara Rao, Member
4. IO/PL - Dr. S. P. Singh
5. Dr. Abhijit Hazarika- user scientist/expert

Representatives of the following firm attended the PBC:

1. M/s. Laser Spectra Services India Private Limited
2. M/s. Specialise Instruments Marketing Company

The following points were discussed during the PBC:

Query raised by M/s. Laser Spectra Services India Private Limited, and response of CSIR-IICT:

CSIR-IICT Specifications	Query	Response
Point number 4: 450Watt continuous wave Xenon lamp with all reflective collection optics and integrated power supply for steady state fluorescence measurements. Wavelength range: 220nm – 1100 nm or longer.	The vendor has proposed alternative lamp source of a newly designed 75 Watt Xenon lamp instead of 450 Watt Xenon lamp as mentioned in the technical specification. The vendor mentioned the about the users whom they supplied this unit.	After discussing with users at other institutes, IICT Technical Team**agreed** to modify the specification to *"suitable continuous wave Xenon lamp with flux matching to 450 Watt Xenon lamp at the output as proven by the signal-to-noise ration of water Raman signal (as specified in the technical document) as well as intensities of the produced white light spectrum at all wavelengths".*
Point number 6 (accessories):	The vendor asked for clarification whether 1-	IICT Technical Team **clarified** that single turret sample

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4-turret sample compartment	turret or 4-turret sample compartment is required, as in the general specification "standard single/four turret sample compartment" was mentioned.	compartment is required. The particular point of 4-turret sample compartment will be removed from the revised technical specification.
Point number 6 (accessories): -Low temperature (liquid nitrogen) measurement accessory (upgrade option should be available up to 4K by attaching He cryostat) -Thermostatic cell holder with stirrer -Cell holder with temp control	The vendor asks for clarification what sample measurement temperature range is required. The vendor also pointed out "Cell holder with temp control" is repetition of "Thermostatic cell holder with stirrer".	IICT Technical Team **clarified** that the sample measurement temperature range of -10 °C to +100°C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. These three points will now be made one in the revised technical specification as *"Peltier-controlled Thermostatic cell holder with temperature range -10 °C to +100 °C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. The cell holder should have stirrer option"*.
Point number 6 (accessories): -Filter set (long pass and neutral density) with filter holder both in excitation emission side	The vendor asks for clarification filter wavelength and optical density	IICT Technical Team **clarified** that *"long pass filters with different wavelengths in the range of 300 nm -1000 nm and neutral density filters with OD 0.1-4.0"* are required.

Query raised by M/s. Specialise Instruments Marketing Company, and response of CSIR-IICT:

CSIR-IICT Specifications	Query	Response
Point number 1: A combined steady-state, nanosecond fluorescence lifetime and phosphorescence lifetime measurement spectrometer with modular design and all	The vendor proposed to change the *"all-reflective optics"* to *"a lens or mirror or suitable optics"*.	CSIR-IICT opted for all reflective optics to have less chromatic aberration resulted from lens optics.**Requested change has not been agreed to.**

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reflective optics with perfect focus at all wavelengths and the highest sensitivity.		
Point number 2: Double excitation 350 mm Czerny-Turner coma-corrected monochromators (700 mm total focal length) each with triple grating turrets for extended wavelength selection (one grating included each), computer-controlled excitation shutter and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 300 nm blaze or better.	The vendor requested to modify the wavelength as 325 mm – 350mm Czerny-Turner coma-corrected monochromators (650mm - 700 mm total focal length)and1200 line/mm grating or better blazed at 300-400 nm	CSIR-IICT Technical team **agreed to amend** the modifications suggested by the vendor.
Point number 3: Single emission 350 mm Czerny-Turner coma-corrected monochromator with triple grating turrets for extended wavelength selection, and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 400 nm or better.	The vendor requested to modify the wavelength as 325 mm – 350mm Czerny-Turner coma-corrected monochromators and 1200-1800 line/mm grating or better blazed at 400-500 nm	CSIR-IICT Technical team **agreed to amend** the modifications suggested by the vendor.
Point number 4: Excitation light sources -Wavelength range: 220nm – 1100 nm or longer.	The vendor requested to change the wavelength range to 230-1000 nm.	CSIR-IICT Technical team **agreed to amend** the modifications as *"230nm – 1000 nm or wider below 230 nm and above 1000 nm"*.
Point number 4: Excitation light sources -Pulsed laser diodes and	The vendor requested to modify the pulsed LED/pulsed laser diode wavelength ranges	CSIR-IICT Technical team **agreed to amend** the modifications as *"Pulsed*

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pulsed LEDs for TCSPC measurements (4 numbers in total) with peak wavelengths of 360nm±10nm (pulsed LED with repetition rate up to 20 MHz), 390nm±10nm (pulsed laser diodes with repetition rate up to 20 MHz), 450nm±10nm (pulsed laser diodes with repetition rate up to 100 MHz), 532nm±10nm (pulsed laser diodes with repetition rate up to 100 MHz).	to ±20-30 nm and the repetition rate to 20 MHz or better to make the specification more general.	*laser diodes and pulsed laser LEDs with repetition rate 20MHz or higher for TCSPC measurements (4 numbers in total) with peak wavelength 360-370 nm (pulsed LED), 390-410 nm (pulsed laser diode), 430-450 nm (pulsed laser diode) and 510-540 nm (pulsed laser diode)".*
Point number 5: Detector - PMT (200-850 nm or wider range below 200 and above 850 nm) detector kit with TE cooled housing with four detection modes (steady state in photon counting or analog mode, TCSPC lifetimes or phosphorescence) selected under computer control. Grating: 400nm or 500nm blazed, 1200 l/mm or 1800 grooves/mm density.	The vendor requested to modify the wavelength range to 200-870 nm with 1800 grooves/mm density grating blazed at 500 nm.	CSIR-IICT technical team noted that already the specification covers the requested range. **So, no further change was agreed upon.**
Point number 5: Detector - Liquid nitrogen or TE cooled InGaAs solid-state photodiode-based detector (900-1600 nm or wider range with below 900 and above 1600 nm). Grating between 800nm and 1000nm blazed, density 600 l/mm or higher.	The vendor requested to modify the wavelength range to 870-1650 nm with830l/mm density grating blazed at 1200 nm.	CSIR-IICT Technical team noticed that the requested wavelength range is already covered in the specification, and **agreed** to amend the modifications on grating specification as *"Grating with 600-850 l/mm density blazed at 800-1200 nm".*

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Point number 6 (accessories): 4-turret sample compartment	The vendor asked for clarification whether 1-turret or 4-turret sample compartment is required, as in the general specification "standard single/four turret sample compartment" was mentioned.	IICT Technical Team **clarified** that single turret sample compartment is required. The particular point of 4-turret sample compartment will be removed from the revised technical specification.
Point number 6 (accessories): -Low temperature (liquid nitrogen) measurement accessory (upgrade option should be available up to 4K by attaching He cryostat) -Thermostatic cell holder with stirrer -Cell holder with temp control	The vendor asks for clarification what sample measurement temperature range is required. The vendor also pointed out "Cell holder with temp control" is repetition of "Thermostatic cell holder with stirrer".	IICT Technical Team **clarified** that the sample measurement temperature range of -10 °C to +100 °C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. These three points will now be made one in the revised technical specification as *"Peltier-controlled Thermostatic cell holder with temperature range -10 °C to +100 °C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. The cell holder should have stirrer option"*.
Point number 6 (accessories): -Filter set (long pass and neutral density) with filter holder both in excitation emission side	The vendor asks for clarification filter wavelength and optical density. The vendor also asked clarification for whether in-built computer-controlled ND filter wheel is required or stand-alone ND filter set is required.	IICT Technical Team **clarified** that *"long pass filters with different wavelengths in the range of 300 nm - 1000 nm and neutral density filters with OD 0.1 - 4.0"* are required. It is also clarified that stand-alone ND filter set is required.
Point number 6 (accessories): -All necessary Time resolved kit for Diode source on Spectrometer including Hub, Diode controller, delay box, sample compartment, and all cables and connections	The vendor requested to make this more general as *"All necessary kits for time resolved measurements"*.	IICT Technical team **agreed** to amend the modifications.

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Point suggested by CSIR-IICT Team during PBC:

IICT Technical team suggested that in the accessories related to computer work station, one amendment may be added as "software upgradation should be available for lifetime of the equipment". This amendment will be added in the revised specification.

Points clarified by CSIR-IICT Team during PBC:

M/s. Laser Spectra Services India Private Limited and M/s.Specialise Instruments Marketing Companyinformed that they do not have problem with other points of tendered specifications and requirements. Participating bidder has been informed that points raised by them during PBC will be examined by CSIR-IICT's **Technical Sub Committee (TSC)** constituted for the purpose of procurement of said equipment and **post PBC changes** in tendered specifications and requirements to be agreed after due consideration of the same by TSC, as agreed, will be uploaded in **CPPP** as part of **revised/amended tendered specifications**.

Minutes of the PBC with changes agreed (if any) will be uploaded in due course at **CPPP** for information and reference of prospective bidders on or before **20.10.2023**. All bidders are requested kindly to take a note of changes in tendered specifications subsequent to PBC held today, i.e., **17-10-2023** before they start submitting their online bids through CPPP.

(Dr.Jithender Reddy)
Member

(Dr. D V Rao)
Member

(Dr. S. P. Singh)
I/O

(Dr. Abhijit Hazarika)
user scientist expert

(Dr. Pratyay Basak) 19/10/2023
Chairperson

Revised Specifications/Corrigendum

File Ref. No. PUR/IICT/DMS/1338/RE/22-23 **Dt. 17.10.2023**

CPPP Tender ID : 2023_CSIR_170190_1

Revised Specifications/Corrigendum subsequent to PBC are as under-

Sl No.	Point No. of Tendered specifications	Existing Specifications under Chapter 4	REVISED/AMENDED Specifications after PBC under Chapter 4
1.	2	**Excitation Monochromator:** Double excitation 350 mm Czerny-Turner coma-corrected monochromators (700 mm total focal length) each with triple grating turrets for extended wavelength selection (one grating included each), computer-controlled excitation shutter and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 300 nm blaze or better.	**Excitation Monochromator:** *Double excitation 325mm-350 mm Czerny-Turner coma-corrected monochromators (650mm-700 mm total focal length) each with triple grating turrets for extended wavelength selection (one grating included each), computer-controlled excitation shutter and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 300-400 nm blaze.*
2.	3	**Emission Monochromator:** Single emission 350 mm Czerny-Turner coma-corrected monochromator with triple grating turrets for extended wavelength selection, and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 400 nm or better.	**Emission Monochromator:** *Single emission 325mm-350 mm Czerny-Turner coma-corrected monochromator with triple grating turrets for extended wavelength selection, and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200-1800 line/mm grating blazed at 400-500 nm.*
3.	4	**Excitation Light Sources:** -450Watt continuous wave Xenon lamp with all reflective collection optics and integrated power supply for steady state fluorescence measurements. Wavelength range: 220nm – 1100 nm or longer. -Pulsed micro second Xenon flash lamp with integrated	**Excitation Light Sources:** *-Suitable continuous wave Xenon lamp with flux matching to 450 Watt Xenon lamp at the output as proven by the signal-to-noise ration of water Raman signal (as specified in the technical document) as well as intensities of the produced white light spectrum at all*

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		power supply and computer controlled high repetition rate (0.1Hz – 100Hz or better) and low optical pulse width (~3 microsecond or less) for phosphorescence measurements in the range of microsecond to second timescale. -Pulsed laser diodes and pulsed LEDs for TCSPC measurements (4 numbers in total) with peak wavelengths of 360nm±10nm (pulsed LED with repetition rate up to 20 MHz), 390nm±10nm (pulsed laser diodes with repetition rate up to 20 MHz), 450nm±10nm (pulsed laser diodes with repetition rate up to 100 MHz), 532nm±10nm (pulsed laser diodes with repetition rate up to 100 MHz).	*wavelengths. The Xenon lamp should be with all reflective collection optics and integrated power supply for steady state fluorescence measurements. Wavelength range: 230nm – 1000 nm or wider below 230 nm and above 1000 nm.* *-Pulsed micro second Xenon flash lamp with integrated power supply and computer controlled high repetition rate (0.1Hz – 100Hz or better) and low optical pulse width (~3 microsecond or less) for phosphorescence measurements in the range of microsecond to second timescale.* *-Pulsed laser diodes and pulsed laser LEDs with repetition rate 20MHz or higher for TCSPC measurements (4 numbers in total) with peak wavelength 360-370 nm (pulsed LED), 390-410 nm (pulsed laser diode), 430-450 nm (pulsed laser diode) and 510-540 nm (pulsed laser diode).*
4.	5	**Detectors:** - PMT (200-850 nm or wider range below 200 and above 850 nm) detector kit with TE cooled housing with four detection modes (steady state in photon counting or analog mode, TCSPC lifetimes or phosphorescence) selected under computer control. Grating: 400nm or 500nm blazed, 1200 l/mm or 1800 grooves/mm density. - Liquid nitrogen or TE cooled InGaAs solid-state photodiode-based detector (900-1600 nm or wider range with below 900 and above 1600 nm). Grating between 800nm and 1000nm	- PMT (200-850 nm or wider range below 200 and above 850 nm) detector kit with TE cooled housing with four detection modes (steady state in photon counting or analog mode, TCSPC lifetimes or phosphorescence) selected under computer control. Grating: 400nm or 500nm blazed, 1200 l/mm or 1800 grooves/mm density. - Liquid nitrogen or TE cooled InGaAs solid-state photodiode-based detector (900-1600 nm or wider range with below 900 and above 1600 nm). *Grating with 600-850 l/mm density*

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		blazed, density 600 l/mm or higher.	*blazed at 800-1200 nm.*
5.	6	**Accessories:** - 4-turret sample compartment	*This point is deleted.*
6.	6	**Accessories:** - Low temperature (liquid nitrogen) measurement accessory (upgrade option should be available up to 4K by attaching He cryostat) - Thermostatic cell holder with stirrer - Cell holder with temp control	*-Peltier-controlled Thermostatic cell holder with temperature range -10 °C to +100 °C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. The cell holder should have stirrer option.*
7.	6	**Accessories:** - Filter set (long pass and neutral density) with filter holder both in excitation emission side	*-long pass filters (with different wavelengths in the range of 300 nm - 1000 nm and neutral density filters with OD 0.1 - 4.0) with filter holder both in excitation emission side.*
8.	6	**Accessories:** - All necessary Time resolved kit for Diode source on Spectrometer including Hub, Diode controller, delay box, sample compartment, and all cables and connections.	*-All necessary kits for time resolved measurements*
9.	6	**Accessories:** - Computer work station with compatible software for hardware control, data acquisition and processing.	*-Computer work station with compatible software for hardware control, data acquisition and processing. Software upgradation should be available for lifetime of the equipment.*

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Complete Revised Specifications/Corrigendum

File Ref. No. PUR/IICT/DMS/1338/RE/22-23

4.1 Specifications

General Description:

1. A combined steady-state, nanosecond fluorescence lifetime and phosphorescence lifetime measurement spectrometer with modular design and all reflective optics with perfect focus at all wavelengths and the highest sensitivity. The system should be consisting of comprehensive fluorescence spectroscopy package, manual and electronic interface. It should have all reflective L-Format optics sample compartment with reference channel excitation correction detector, standard single/four turret cuvette sample tray with one 10 mm quartz cuvette, manual filter holders. High sensitivity with >20,000:1 or better for the Signal-to-Noise ratio of the water Raman signal (measured with excitation at 350 nm with a 1 second integration time and 5 nm spectral bandwidth). Wavelength accuracy of ±0.5nm or better. Computer-controlled, continuously adjustable slits 0-20nm or more.

2. Excitation Monochromator:

Double excitation 325mm-350 mm Czerny-Turner coma-corrected monochromators (650mm-700 mm total focal length) each with triple grating turrets for extended wavelength selection (one grating included each), computer-controlled excitation shutter and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200 line/mm grating blazed at 300-400 nm blaze.

3. Emission Monochromator:

Single emission 325mm-350 mm Czerny-Turner coma-corrected monochromator with triple grating turrets for extended wavelength selection, and computer-controlled slits, including computer controlled intermediate slit. Supplied with 1200-1800 line/mm grating blazed at 400-500 nm.

4. Excitation Light Sources:

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-Suitable continuous wave Xenon lamp with flux matching to 450 Watt Xenon lamp at the output as proven by the signal-to-noise ration of water Raman signal (as specified in the technical document) as well as intensities of the produced white light spectrum at all wavelengths. The Xenon lamp should be with all reflective collection optics and integrated power supply for steady state fluorescence measurements. Wavelength range: 230nm – 1000 nm or wider below 230 nm and above 1000 nm.

-Pulsed micro second Xenon flash lamp with integrated power supply and computer controlled high repetition rate (0.1Hz – 100Hz or better) and low optical pulse width (~3 microsecond or less) for phosphorescence measurements in the range of microsecond to second timescale.

- Pulsed laser diodes and pulsed laser LEDs with repetition rate 20MHz or higher for TCSPC measurements (4 numbers in total) with peak wavelength 360-370 nm (pulsed LED), 390-410 nm (pulsed laser diode), 430-450 nm (pulsed laser diode) and 510-540 nm (pulsed laser diode).

5. Detectors:

- PMT (200-850 nm or wider range below 200 and above 850 nm) detector kit with TE cooled housing with four detection modes (steady state in photon counting or analog mode, TCSPC lifetimes or phosphorescence) selected under computer control. Grating: 400nm or 500nm blazed, 1200 l/mm or 1800 grooves/mm density.

- Liquid nitrogen or TE cooled InGaAs solid-state photodiode-based detector (900-1600 nm or wider range with below 900 and above 1600 nm). Grating with 600-850 l/mm density blazed at 800-1200 nm.

6. Accessories:

- Sample holder: Liquid/solid/powder

- Integrating Sphere for absolute Quantum Yield Measurement. Should be easily mounted with the spectrofluorimeter. Reflectivity from 250-2500nm. Should come with 10mm cuvette holder for liquid, and sample tray for solid or powders.

- Automatic Polarization accessory for UV/VIS/NIR range

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-Peltier-controlled Thermostatic cell holder with temperature range -10 °C to +100 °C or better with optional upgrade system to liquid nitrogen temperature of -77K to 500K or better. The cell holder should have stirrer option.

- long pass filters (with different wavelengths in the range of 300 nm - 1000 nm and neutral density filters with OD 0.1 - 4.0) with filter holder both in excitation emission side.

- Quartz Fluorescence Cell, 4-sides and base polished, 10mm pathlength with 3.5 ml nominal volume with white PTFE screw cap: at least 4 No.

- All necessary kits for time resolved measurements

- Computer work station with compatible software for hardware control, data acquisition and processing. Software upgradation should be available for lifetime of the equipment.

-Suitable UPS with 30 min power back up with batteries.

4.2 **Scopeof Supplyandincidentalworks:** Please refer to Para 4.2 above.

4.3 **Inspection&Tests-**

Will be done to check the efficiency and efficacy of the contractual supply, if required.

Important Terms and Conditions that must be met by the bidder/supplier:

1. Total Cost must include comprehensive _____ (labor + parts, etc.) warranty on the complete system.
2. Total price must include transportation and complete installation of the units.
3. Detailed original literature indicating all technical specifications and features must be enclosed with the offer. Merely stating "compiled" in the compliance statement will not be considered and offer made will be disqualified.
4. Commitment for the supply of Complete Operating Instruction manuals, Manuals / diagrams and engineering details (including Refrigeration) to be supplied along with the system. Commitment to be made in the offer.
5. In case, CSIR-IICT opts for AMC/CMC after expiry of the warranty period, bidder should accept to extend the service on bill basis on completion of prescribed billing cycle (Half Yearly/Quarterly, etc) and no advance payment to be made.
6. All standard accessories that would be supplied with the system must be clearly mentioned in the offer.

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7. Technical presentation/ demonstration of the offered equipment as per tendered and need to be provided, if so required by CSIR-IICT.
8. List of users (Govt. of India Institutes and research laboratories) of the similar models as the one(s) offered along with the names, addresses, telephone numbers and mail ID's to be enclosed.
9. Availability of service support at site and response time for a service call during and after warranty to be specified.
10. The principals / local agents are responsible for the installation, testing and commissioning of the system and accessories.
11. Pre-installation and utility requirements for installation and running the system, if any, should be clearly mentioned in advance.
12. All other clauses of payment details, validity of quotation, delivering schedule, shipment etc. to be indicated.

4.4 **Training**: Free training should be imparted at the purchaser's premises on operation of the supplied item.

4.4.1: Total Cost must include 36 Months comprehensive onsite warranty (labor + parts, etc.) on the complete system.

4.5 Warranty:

36 Months comprehensive onsite warranty from the date of successful installation and final acceptance of the supplied system by CSIR-IICT user.

All the other tender specifications and requirements under Chapter 4 remains unchanged. Bidders may please submit their bids accordingly.

(Dr.Jithender Reddy)
Member

(Dr. D V Rao)
Member

(Dr. S. P. Singh)
I/O

(Dr. Abhijit Hazarika)
user scientist/expert

19/10/2023
(Dr. PratyayBasak)
Chairperson