

**Notice Inviting Open Tender for Procurement of High Resolution
Fluorescence and VNIR Spectrometers at the Indian Institute of Science,
Bangalore**

(Last date of Submission 15th June 2021)

Date: 25th May 2021
Dear Sir/Madam:

Two separate spectrometers with optional optical fiber cables and accessories need to be procured at IISc Bangalore. Please send your tender documents valid for 90 days from the actual date of opening the technical bid, for the supply of equipment described below. Your documents/quotation should clearly indicate the terms and conditions of the quotations, delivery schedule, entry tax, payment terms, warranty coverage etc. The tender should be submitted in two separate sealed envelopes – one containing the “Technical bid” and other containing the “Commercial bid”, both of which should be duly signed and must reach the undersigned on or before 17:00 hours 15th June 2021.

The Chairman
Civil Engineering Department
Indian Institute of Science,
Bangalore 560012,
Karnataka, India.
Attn: Debsunder Dutta

SECTION 2 – Technical Specifications

A. User Configured High Resolution High Sensitivity Modular Spectrometer for Fluorescence Retrievals/Measurements.

I. Main Instrument Specifications (the specifications stated are the base specifications of the spectrometer)

SI No	Description	Specification (Minimum)
1	Integration Time Range	8ms – 3600s
2	Wavelength sensitive range	350nm – 1100nm, grating dependent
3	Number of Detector Pixels	1024
4	Detector	Back-thinned, TE Cooled, 1024 x 58 element CCD array (Hamamatsu S7031-1006 scientific grade)
5	Entrance Slit	200 micrometer wide (with options for 5, 10, 25, 50 ,100 or 200 micrometer)
6	Wired Communications	USB 2.0, 480 Mbps (USB 1.1 compatible); RS-232 (5-wire)
7	Dynamic range	~85000:1
8	Input Fiber Connector	SMA 905
9	Optical resolution	0.1nm – 8nm (depending on grating and size of entrance aperture)
10	Onboard Memory	>14,500 spectra
11	Stray Light	<0.08% at 600 nm; 0.4% at 435 nm
12	Signal to Noise Ratio	1000:1
13	Grating	2400 grooves/mm, variable options should be available for interchange (such as from 600 grooves/mm – 3600 grooves/mm with UV/Vis/NIR optimization)
14	Quantum Efficiency	90% (peak)
15	Power Requirements	Supply voltage: 4.5 – 5.5 V
16	Dimensions	≤ 185mm x 120mm x 50mm
17	Weight	≤ 1.2kg; power supply ≤ 0.45 kg
18	Signal Attenuation	0 dB (100% attenuated)

The above specifications are the base specifications of the modular spectrometer, this has to be configured with the following user specifications:

1. **Configured Spectrometer for fluorescence detector as specified above, no window options installed INTSMA-200**
2. **Interchangeable Round SMA 200um, Longpass filter, installed, transmits >590 nm Mirror Upgrade to best quality, high-sensitivity spectrometer with back-thinned, TE- cooled CCD detector; user-configured within 185-1100 nm GRATING (2400 grooves/mm) installed, select 40-60 nm, best: 300-950nm 2000/475, start at 730 nm**

This configuration ensures extremely low stray light and peak quantum efficiency in the optical bench and with the specialized grating a spectral resolution (FWHM) of 0.3 nm or better (lower, <0.3 nm) is obtained in the 730 nm - 780 nm wavelength region for retrieval of Solar Induced Fluorescence.

II. Optional Optical Fibers and Accessories

- i. 600 µm Premium Fiber, VIS/NIR, 2 m, BX Jacket SMA 950.
- ii. Visible-NIR Bifurcated Fibers 600 µm, BX jacket 2m robust for field use with precision SMA 950.
- iii. 10m Visible-NIR optical fiber 600 µm with precision SMA 950 – Two nos.
- iv. Premium 600 µm reflection probe and holder.
- v. Collimating Lens for long distances, 200-2000 nm.
- vi. 10 X 10 inch Spectralon Reference standard with calibration certificate
- vii. Cosine Corrector 2 nos.
- viii. Calibrated W halogen light source.
- ix. Optical fiber connectors.

III. Warranty

The complete system is to be under manufacturer's warranty period of 1 years including any accessories, parts and controllers.

IV. Software for data acquisition and preliminary post processing

Data Acquisition Software with enhanced GUI, streamlined operation compatible with windows/Mac OS with possible automation of data collection and workflow. The software should be also able to operate the spectrometer such as start and stop data collection, change configuration acquisition time etc.

V. Optional Extended Warranty

The complete system is to be under extended manufacturer's warranty for an additional period of 2 years from the date of expiry of manufacturer's warranty including any accessories, parts and controllers.

VI. Optional Annual Maintenance Contract

An annual maintenance contract for a period of 5 years from the date of installation. Indicate any free AMC offered.

B. Preconfigured Visible-Near Infrared Spectrometer for Vegetation Measurements.

I. Main Instrument Specifications (the specifications stated are minimum required, a better specification is desirable).

SI No	Description	Specification (Minimum)
1	Integration Time Range	1ms – 65s
2	Wavelength range	350nm – 1000nm
3	Number of Detector Pixels	2048
4	Optical Resolution	1.3nm (FWHM)
4	Detector	linear silicon CCD array
5	Entrance Slit	25 micrometers
6	Wired Communications	USB, high density 40 pin JAE DD4 connector, 16bit A/D resolution
7	Dynamic range	~1300:1
8	Input Fiber Connector	SMA 905
9	Trigger Modes	4 modes
10	Dark Noise	50 RMS counts
11	Signal to Noise Ratio	250:1
12	Grating	600 grooves/mm
13	Detector Collection Lens	No
14	Quantum Efficiency	90% (peak)
15	Power Requirements	250 mA @ 5V DC
16	Dimensions	≤ 100mm x 65mm x 35mm
17	Weight	≤ 280g

II. Optional Optical Fibers and Accessories

- i. 600 μm Premium Fiber, VIS/NIR, 2 m, BX Jacket SMA 950
- ii. Visible-NIR Bifurcated Fibers 600 μm, BX jacket 2m robust for field use with precision SMA 950
- iii. 10m Visible-NIR optical fiber 600um with precision SMA 950 Two Nos

- iv. Premium 600um reflection probe and holder
- v. Collimating Lens for long distances, 200-2000 nm
- vi. Cosine Corrector
- vii. Optical fiber connectors

III. Warranty

The complete system is to be under manufacturer's warranty period of 1 years including any accessories, parts and controllers.

IV. Software for data acquisition and preliminary post processing

Data Acquisition Software with enhanced GUI, streamlined operation compatible with windows/Mac OS with possible automation of data collection and workflow. The software should be also able to operate the spectrometer such as start and stop data collection, change configuration acquisition time etc.

V. Optional Extended Warranty

The complete system is to be under extended manufacturer's warranty for an additional period of 2 years from the date of expiry of manufacturer's warranty including any accessories, parts and controllers.

VI. Optional Annual Maintenance Contract

An annual maintenance contract for a period of 5 years from the date of installation. Indicate any free AMC offered.

Section 3–Terms and Conditions:

1. The tender document should be in English and be submitted in two bid system; i.e., Technical bid, and Commercial bid in two sealed envelopes with commercial or technical bid clearly indicated on the envelope. These two sealed envelopes should be placed within a larger envelope and “High Resolution Fluorescence and VNIR Spectrometer Bid – Debsunder Dutta, Civil Engineering. Department” should be written on the outer envelope.
2. The technical bid must include all details of technical specifications of the instrument along with commercial terms and conditions masking only the price component. Bill of materials, brochures, technical datasheets, and any other document may be enclosed to help the evaluation of the technical bid. In the technical bid include the complete details all components of the main instrument and the accessories. Please also include warranty terms and any other information on upgradation terms/extra accessories in the technical bid.

3. The technical bid must clearly state the specifications of the fluorescence spectrometer (section 2-part A) and VNIR spectrometer (section 2-part B) along with the accompanying standard items/accessories and all other details including the warranty terms as specified in section 2 of this document. The details of the grating characteristics including type, efficiency characteristics, parameters must be clearly specified. The details of detector array must be clearly specified.
4. The commercial bid must include the price of the instrument (CIF, Bangalore, applicable Custom Duty will be borne by the Institute) and all components including controller accessories indicating component-wise and itemized breakup.
5. The commercial bid must indicate detailed component-wise and itemized price breakup and must include optional items/accessories. The bidder must indicate the base price and the tax amount separately for each component.
6. Bidder should have well established own establishment. Enclose Company Registration Certificate, PAN, 3 years of audited balance sheets and turnover amount for a period of 3 years.
7. The vendor should have a good track record of having previously supplied similar equipment in India or elsewhere in the World. (Please furnish complete details including names and contact addresses). Reference letters may be sought by the committee to arrive at a decision.
8. The vendor should have qualified technical service personnel for the instrument based in India preferably in Bengaluru.
9. Bidder should have executed at least two order of similar instrument in India in the last 2 years. (Please provide copy of purchase orders and details).
10. The bidder should provide a list of national and international publication resulting from the data of the instrument.
11. The Bidder should not be currently blacklisted by any institution, bank in India or abroad (Please provide self-declaration).
12. The payment will be through a Letter of Credit.
13. Agency commission (not encouraged) if any should be clearly mentioned and detailed in the commercial bid.
14. The lead time for the delivery of the equipment should not be more than two months from the date of receipt of purchase order and must be mentioned in the technical bid.
15. If the equipment or any parts/accessories are found to be defective, they have to be replaced or rectified at the cost of the supplier within 30 days from the date of receipt of written communication from us. If there is any delay in replacement or rectification, the warranty period needs to be extended by a year and/or face a penalty equal to the valuation of the equipment.
16. The two modular spectrometers as stated in technical specification part A and part B has to be from the same company.
17. The bidder must invite engineers from the company to have a detailed and clear discussion and finalize the configuration of the fluorescence spectrometer to accurately satisfy the purchaser's requirements.
18. All fiber optical attachments, cables, accessories and connections must be high quality and from the same parent instrument company and compatible so that they can be attached to each

other (cables) and the instrument as well as interchangeable between the two spectrometers in a modular way.

19. The technical bid will be opened first and evaluated.
20. Bidders meeting the required criteria as stated in Sections 2 and 3 of this document as well as the terms and conditions shall only be considered for Commercial Bid opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
21. Following the opening of technical bid a presentation may be sought from the bidder.
22. Mode of Shipment: the equipment must be shipped via air only, insured and transported to the installation site at IISc by the supplier.
23. Customs clearance: The department will furnish the necessary papers for the import of items into India, necessary custom duty exemption certificate and other supporting documents to facilitate the import of the items.
24. During the warranty period, the bidder shall be fully responsible for the manufacturer's warranty in respect of proper design, quality and workmanship of all the systems supplied. If there is any delay in replacement or rectification, the warranty period needs to be extended by a year and/or face a penalty equal to the valuation of the equipment.
25. During the warranty period, the bidder shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser.
26. The Engineers of the parent manufacturer or bidding firm must install, demonstrate and provide the training on Spectrometers for two days at IISc, Bangalore without additional cost.
27. The bids should be valid for at least 90 days from the last date of submission of the quotation.
28. The cost should be inclusive of delivery till the IISc campus. Price offer must be on FOR-IISc Bangalore basis. Please note that IISc being a DSIR recognized research institution under GST notification no. 47/2017 and the items under this procurement is required for research purposes only, is eligible for reduced GST (5%). Please also include any available educational discounts in the commercial bid. IISc may issue the GST Exemption Certificate upon a formal request from the vendor alongwith a copy of invoice.
29. The decision of the purchase committee will be final.
30. IISc, Bangalore reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time period to award of construct without thereby incurring any liability of the affected bidder or bidders.
31. Tender documents that do not satisfy the "Terms and Conditions" listed herein will be disqualified.
32. The tender documents should be sent to the following address no later than **15/06/2021 17:00 Hrs.**

The Chairman
Civil Engineering Department
Indian Institute of Science,
Bangalore 560012
Karnataka, India.
Attn: Debsunder Dutta