

**Request for Quote (India based vendors only) for the procurement of spectrometer with high resolution spectrograph, scientific grade CCD camera detector and white light source. (Last date: 29 October 2021)**

This is a Request for Quote (RFQ) from **Class I and Class II local suppliers/ manufacturers** only for the procurement of Spectrometer with high resolution spectrograph, scientific grade CCD camera detector and white light source, for the Department of Inorganic and Physical Chemistry (IPC) of the Indian Institute of Science, Bengaluru.

Only the **Indian Original Equipment Manufacturer (OEM)** or their distributor shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below. With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce, and Industry, dated 4th June 2020 will be followed. The bidders must go through the Government of India order stated above and follow all the rules and regulations therein.

Relevant definitions as per Government of India order:

- **Class-I local supplier** - A supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%.
- **Class-II local supplier** - A supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%.
- **Local content** – The amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.

**Procedure:**

1. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. The technical bid should contain all commercial terms and conditions, except the price. **Only vendors who meet the technical requirement will be considered for the commercial negotiation.**
2. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier distinguished by their “local content”. Failing this the bid will be automatically rejected.
3. The vendor to state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.
4. Sperate detailed justification needs to be given to substantiate the qualification as Class 1 and Class 2 suppliers and the intender reserves the right to cross-check the factual validity of the same and one if some foreign parts or equipment is being put forward then please submit the “*bill of material*” details for the same for evaluation.

5. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table with 5 columns.
  - a. First column must list the technical requirements, in the order that they are given in the technical requirements below.
  - b. The second column must provide specification of the instrument against the requirement (please provide quantitative responses wherever possible)
  - c. The third column should describe the compliance with a “YES” or “NO” only. Ensure that the entries in the column 2 and column 3 are consistent.
  - d. The fourth column should clearly state the **reasons/explanations/context** for deviations if any. Without clear explanation, just stating YES” or “NO” will not be considered.
  - e. The fifth column may contain additional remarks. It can be used to highlight the technical features, qualify response of previous columns, or provide additional details.
6. Items in addition to that listed in the technical table that the vendor would like to bring to the attention of the committee, such as data sheets, technical plots etc. can be listed at the end of the compliance table. Vendors are also encouraged to highlight the advantage of their tools over comparable tools from the competitors.
7. If multiple systems can fulfil the requirements, vendors can submit multiple bids.
8. The commercial bid must include the price of the item in Indian currency, inclusive of all discounts. All accessories needed for the instrument to function as per the technical specification must be listed. Please provide the itemized quotes for the instrument and any other attachment/accessory.
9. As an option, please provide itemized cost for any suggested accessories/add-ons that may enhance the usability, capability, accuracy, or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
10. Provide itemized cost for required spares for 3 years of operation. For sake of calculation the vendor may assume the active instrument usage of 35 hours/week. The system will remain powered on continuously. This number will be used to estimate the lifecycle cost of the instrument.
11. The commercial bid should indicate the following separately: (a) equipment price (b) optional items (c) Freight and insurance cost (d) Shipping cost and (e) the Total cost.
12. List of customers and references: The Bidder should have supplied similar equipment in in **Govt. of India funded institutes (IITs, IISc, IISERs and NITs) and central universities**. Please provide the details and contact information.
13. **The quotations should be on FOR-IISc Bangalore basis in INR only. Please quote the price of each optional line item, separately.**

The deadline for submission of the bids is **29 October 2021, 5:30 pm Indian Standard Time**. Proposals should arrive at the office of Dr. Anoop Thomas, Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bengaluru, Karnataka – 560 012, India. Direct all questions concerning the acquisition to addresses to Dr. Anoop Thomas at: [athomas@iisc.ac.in](mailto:athomas@iisc.ac.in)

## **II. General terms and conditions:**

1. The decision of the purchase committee will be final. The Institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
2. The quote must also include references of 5 previous installations of the similar equipment in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently. Details of such systems with model numbers and users should be provided. The references can be used to disqualify vendors with poor track record of service, build quality, system performance or poor availability of spares.
3. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
4. The vendor should be able to repair and maintain the equipment once it is installed. Clarify if periodic (preventive) maintenance can be done by a trained on-site engineer (i.e. IISc employee) or requires a specialist from the OEM. The bidder should have qualified technical service personnel for the equipment based in India and must assure a response time if <24 hours after receiving a service request.
5. If maintenance must be done by OEM, as an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The AMC must cover one scheduled and one emergency visit per year. The AMC cost must also include an itemized list of spares that are essential for the scheduled visits.
6. All the quotations must be valid for at least 90 days at the time of submission.
7. The quotations should clearly indicate the terms of delivery, delivery schedule, tax, and payment terms.
8. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
9. The lead-time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order.

10. 100% payments will be released after the completion of delivery and satisfactory installation subject to TDS as per rules. As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.
11. The bidder is responsible for the installation of the equipment in the IISc campus.
12. Necessary training to operate the procured setup and required literature support (in English language) should be provided without additional cost.
13. Bidders should undertake to support the system with spares and software bugfixes, if any, for the next 5 years.
14. Please indicate the warranty provided with the tool. No travel claims must be made by the vendor for servicing during the guarantee/warranty period.
15. Wherever requested in this specification sheet, data must be supplied along with the technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
16. All guaranteed specifications will have to be demonstrated, upon request, in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
17. Printed literature and published papers in support of all compliance to the prescribed specifications may be provided.
18. Technical evaluation by the institute must include demonstration to verify functionalities and capabilities of the system quoted. Any discrepancy between the promised specifications and demonstrated specifications will be deemed as technical non-compliance. If need arises, the vendor must be ready to physically visit IISc for a techno commercial discussion.
19. The intender reserves the right to withhold the placement of the final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all the above conditions without assigning any reason.

### **III. Technical requirements for spectrometer system with high resolution spectrograph, scientific grade CCD camera detector and white light source.**

#### **High Power Deuterium and Tungsten halogen UV-VIS Light Source**

Spectral Range	: 190-2500nm
Stabilization time	: <60s
Power output	: >200W/m <sup>2</sup>
External filter slot	: 1/2" filter holder on standard light source
Connectivity	: Should be connectible to fiber optic cable
Lifetime of lamp	: 1000h for UV and 2500h for tungsten halogen

#### **High resolution spectrograph**

Focal length	: 300 mm or higher
Aperture	: f/4.1 or lower
Spectral range required	: 300 to 900 nm
Drive step size	: At least 0.002 nm/step
Grating Turret	: Interchangeable Triple grating slots, automatic detection of installed turret and gratings are required
Grating size	: 68mm x 68 mm
Gratings required	: (1) Ruled grating 1200g/mm, Blaze wavelength-500 nm (2) Ruled grating 300g/mm, Blaze wavelength-500 nm (3) Ruled grating 150g/mm, Blaze wavelength-500 nm
Wavelength Accuracy	: ±0.2 nm
Wavelength Repeatability	: ±0.075 nm or better
Dispersion	: 2.8 nm/mm with 1200g/mm grating 10 nm/mm with 300g/mm grating 21 nm/mm with 1200g/mm grating
Focal plane size	: Around 14 x 30 mm
CCD Spectral resolution	: 0.10 nm or better
Astigmatism correction with toroidal mirrors	

#### **Scientific grade CCD detector**

Type	: Scientific grade back illuminated deep depletion CCD
Etaloning	: Lowest etaloning

Read out speeds	: 100 KHz and 2 MHz
Dark current @-75 °C	: 0.03 e <sup>-</sup> /p/s
CCD Format	: <b>1024 x 256 pixels</b> (Bidders may quote 1340 x 400 pixels format back illuminated deep depletion CCD detector, if available, as an optional item)
CCD size	: 20 mm x 20 mm with 100% fill factor
Imaging area	: ~26 x 6 mm (optically centered)
Cooling method	: Air
Deepest cooling temperature	: -70 oC at 20oC ambient condition
Thermostating precision	: ±0.05 oC
ADC speed/bits	: 100 KHz/16-Bit and 2 MHz/16-Bit
System Read noise	: At 100 KHz : 3 e <sup>-</sup> rms At 2 MHz : 11 e <sup>-</sup> rms
Spectral Rate	: At 100 KHz Full vertical Binning : 60 fps At 2 MHz Vertical Binning : 315 fps
Operating Environment	: +5 to 30°C

## Software

- The software must offer the user the complete control over the spectrograph and camera for data acquisition and provide an easy “experiment setup” save/ load function that quickly loads the experimental settings.
- The software must include a powerful built-in math engine to analyze the image and spectral data in real time.
- Utilizing NIST-traceable light sources, the software should provide very accurate wavelength and intensity calibration, free of instrument/optics bias.
- The software should allow seamless integration of hardware controls and direct data acquisition from LabVIEW, MATLAB and Python script interfaces.
- The software should automatically export the data into file format such as TIFF, FITS, ASCII, AVI, IGOR, and Origin.

## Optional Items:

- (1) Calibrated Light source for fully automated wavelength calibration of spectrograph
- (2) NIST Traceable Light source for intensity calibration to remove instrument response and provide absolute sample response.
- (3) 150 W collimated research grade Xe arc lamp light source
- (4) Back illuminated deep depletion CCD detector with 1340 x 400 pixels format