Global tender notification for the procurement of spectrometer with high resolution spectrograph, scientific grade CCD camera detector and white light source.
(Last date: 24 December 2021)
GTE Approval No. IISc-GTE-2021-117

Quotations are invited 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 on C.I.P. Bangalore basis (by Air Freight only). The bids must mention the terms of delivery, delivery schedule, estimated delivery date, and payment terms. The duly signed tender must be submitted in two separate sealed envelopes: (i) containing the technical bid and (ii) containing the commercial bid, both of which should reach us on or before 17:00 hours on Friday, 24 December 2021.

The bids should be submitted to the Department of IPC office and addressed to:

The Chairman
Department of Inorganic and Physical Chemistry,
Indian Institute of Science, Bengaluru,
Karnataka – 560 012, India.
Kind attention: **Dr. Anoop Thomas**

Procedure:

1. Vendors will be required to submit a technical bid and a commercial bid 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 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.
3. 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.

4. If multiple systems can fulfil the requirements, vendors can submit multiple bids.
5. The commercial bid must include the price of the item 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. Please quote the price of each optional line item, separately.

The deadline for submission of the bids is **24 December 2021, 5:00 pm Indian Standard Time**. Proposals should arrive at the office of Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bengaluru, Karnataka – 560 012, India. Direct all questions concerning the acquisition to Dr. Anoop Thomas at: 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 then 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 Tungsten Halogen Light Source

Spectral Range	: 350-2000nm
Stabilization time	: <60s
Power output	: >200W/m^2
External filter slot	: 1/2" filter holder on standard light source
Connectivity	: Should be connectible to fiber optic cable
Lifetime of lamp	: ≥ 2500h for tungsten halogen

High resolution spectrograph

Focal length	: 300 mm or higher
Aperture	: f/4.1 or lower at all resolutions maintaining uniform throughput. Use of any additional optical hardware to improve resolution must be clearly mentioned along with its impact on the throughput.
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
Dispersion	: 2.5 nm/mm or better with 1200g/mm grating 11 nm/mm or better with 300g/mm grating 22 nm/mm or better with 1200g/mm grating
Wavelength Accuracy	: ±0.2 nm

Wavelength Repeatability : ±0.07 nm or better

Focal plane size : Around 14 x 30 mm

CCD Spectral resolution with 1200g/mm grating : 0.12 nm or better

Astigmatism correction with toroidal mirrors

Scientific grade CCD detector

Type	: **Scientific grade back illuminated deep depletion CCD camera**
Etaloning	: Lowest etaloning
Read out speeds	: 100 KHz and 2 MHz
Dark current @-75 ^{o}C	: ≤0.03 e^{-}/p/s
CCD Format	: 1340 x 400 pixels
CCD size	: ≥20 mm x 20 mm with 100% fill factor
Imaging area	: ~26 x 8 mm (optically centered)
Cooling method	: Air
Deepest cooling temperature	: -70 ^{o}C at 20 ^{o}C ambient condition
Thermostating precision	: ±0.05 ^{o}C
ADC speed/bits	: 100 KHz/16-Bit and 2 MHz/16-Bit
System Read noise	: At 100 KHz : 3 e^{-} rms At 2 MHz : 11 e^{-} rms
Spectral Rate	: At 100 KHz Full vertical Binning : 60 fps At 2 MHz Vertical Binning : 315 fps
Operating Environment	: +5 to 30 ^{o}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