

Open Tender Notification for the procurement of “An integrated system (all-in-one system) with a confocal microscope coupled with lasers, detectors and filters for photon excitation and detection” at the department of Instrumentation and Applied Physics, Indian Institute of Science, Bangalore

**(TENDER FROM DOMESTIC VENDORS)
(Last date of submission of tenders: 23rd August 2021 by 5:00 PM)**

Date: 17.08.2021

Dear Sir/Madam,

This is a request for quote (RFQ) from domestic (India-based) manufacturers only for procurement of an assembly of lasers, detectors and filters for photon excitation and detection at the Department of Instrumentation and Applied Physics (IAP), Indian Institute of Science, Bangalore.

Please send a quotation valid for 90 days for the supply of equipment described below. Your quotation should clearly indicate the terms and conditions of the quotations, delivery, 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 23-August-2021.

All interested vendors 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. As per this order, the government has defined a ‘Class-I local supplier’ as “a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%”. A ‘Class-II local supplier’ is “a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%”. Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender. Any “Non-local supplier” i.e. “a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%” is ineligible to participate in this tender.

The deadline for submission of proposals is 23rd August 2021 by 5:00 PM. Proposals should arrive at the office of Dr. Abha Misra, Department of Instrumentation and Applied Physics, Indian Institute of Science, Bangalore, Karnataka 560012, India.

Direct all questions concerning the acquisition to Dr. Abha Misra at: abha@iisc.ac.in.

General Terms and Conditions

1. The bid should be submitted in a two-cover system, i.e. technical bid and commercial bid separately in sealed covers. The technical bid should contain all commercial terms and conditions, except the price.
2. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table that should describe your compliance in a "yes" or "no" response against each of the items in the table listed in this RFQ. If "no" the second column should state the extent of deviation. The third column should state the reason for the deviation, if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirement table below.
3. In the commercial bid, the price should be inclusive of all discounts.
4. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
5. The covering letter should clearly state whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected.
6. 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.
7. 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. It should be clearly mentioned in the technical and commercial bids.
8. All the quotations must be valid for at least 90 days at the time of submission.
9. List of customers and references: The Bidder should have supplied similar equipment in Central Universities preferably in centrally Funded Technical Institutes (IITs, IISC, IISER, NIT). Please provide the details and contact information
10. 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.
11. Items in addition to that listed in the technical table that you 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.
12. Vendors are encouraged to highlight the advantage of their tools over comparable tools from the competitors.
13. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
14. 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.
15. Incomplete bids will be summarily rejected.
16. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

- a. To accept OR reject lowest tender or any other tender or all the tenders.
 - b. To accept any tender in full or in part.
 - c. To reject the tender, offer not confirming to the tender terms.
17. Warranty terms and additional warranty options is a must for all the components. Please specify the service plan like whether the local distributor will address the issue or the parent company.
 18. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
 19. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
 20. Please quote the price of each optional line item, separately.
 21. All documentations in the tender should be in English.
 22. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
 23. The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.
 24. The complete system is to be under warranty period of minimum 3 years (year wise breakup value should be shown in the commercial bid) including free supply of consumables, spare parts and data analysis software from the date of functional installation. If the instrument is found to be defective, it has to be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.
 25. An annual maintenance contract for a period of at least 2 years post warranty should be provided on completion of warranty period. The AMC costs will not be considered towards classifying the domestic nature (class 1 or class 2) of the vendor).
 26. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.
 27. The technical bid must clearly specify the prescribed technical specifications without including the prices. Please provide in detail the specifications under each subhead and bullet point. Unique characteristics may be highlighted.
 28. Vendors who include price information in the technical bids will be automatically disqualified.
 29. At least 3 independent reference letters from India should be provided. IISc may contact more users for obtaining independent references. The committee will have right to reject a bid based on reference letters.
 30. Technical bids will be opened first. IISc may seek clarifications after opening of technical bids and may ask vendors to perform some example experiments on the samples given by IISc to demonstrate the promised technical specifications. Vendors may be required to give presentations.
 31. There are several items that require detailed information to be provided by the supplier. If information is not provided against any of these items, this will disqualify the supplier.

32. The financial turnover of the equipment manufacturer in the previous financial year should be more than or equal to 10 times the total order value. The bidder shall furnish specific details of the company performance.
33. After technical evaluation by a committee, vendors may be asked to re-quote in a specific format to facilitate comparison of prices.
34. Price bids of only technically qualified vendors will be considered.
35. Prices to be quoted separately for baseline system and options. Prices should be quoted in adequate detail with relation to packing details to cover insurance compensation in case of damage to any specific modules
36. Indicate separately price of spares listed above in terms of unit cost. The price of these spares will be included in the price comparison. Any additional spares recommended by the company will be considered for ordering but not included in the comparison. The buyer reserves the right to make the final decision on ordered spares.
37. IISc also reserves the right to cancel the tender at any time without assigning any reason whatsoever.
38. Indicate delivery period.
39. Order will be placed on lowest bid from technically qualified vendor.
40. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
41. The quotations should be on FOR-IISc Bangalore basis in INR only.

Warrantee and post-supply services	Warrantee: 1 year. The supplier will be responsible for service and supply of any parts that may become faulty.
	AMC (Optional): Cost of two-year AMC after warranty should be provided.
	Service: The supplier should have an office or an associate (agent) in India to provide after sales service, support and maintenance. Undertaking shall be given for provision of after sales service, software updates and spares for a minimum period of 10 years after warranty.
Pre-installation preparation at IISc	Detailed pre-installation requirements and delivery period should be explicitly mentioned without any ambiguity. The quotation must clearly specify make and model of the equipment. All relevant technical literature / brochures, application notes and specifications must also be provided.
Installation and Commissioning	To be done by supplier
Acceptance Criterion	The supplier has to demonstrate all the functions of the system according to the specifications after successful installation at IISc
Track Record of Supplier	Supplier must have installed and commissioned at least 5 same or similar capacity of machines in last three years in IISc/IIT's/NIT's/ CSIR labs or DRDO. Details and installation certificates to be provided along with the technical bid.

Technical Specifications:

An integrated system (All-in-one system) with a confocal microscope should be provided to allow measuring correlated characteristics. The following below mentioned technical details provide specifications of various parts for a stand-alone system and should not be provided in parts or pieces. The bid for non-integrated system will be disqualified. The system should enable following measurements with both general and specific parameters listed below:

Time-Resolved Photoluminescence (TRPL)-TRPL Imaging, confocal Raman and Photoluminescence Analysis with 2D and 3D imaging, Antibunching, UV-Vis Spectroscopy, multi-wavelength platform for spectroscopy applications. Detection subsystem with single photon sensitivity with- High light collection efficiency, configuration of up to four detection channels which can be coupled to the microscope via a multimode fiber, Sensitive detectors, which should be optimized for wavelength, signal brightness. Timing with picosecond resolution up to ms- Based on the method of Time-Correlated Single Photon Counting (TCSPC) in the Time-Tagged Time-Resolved mode (TTTR) - TTTR data acquisition can be used for standard lifetime measurements, TRPL Imaging can be performed and luminescence studies should be easily resolved.

Research grade confocal microscope for viewing samples:

Confocal microscope with 6x turret, Either 2- or 3-dimensional XY(Z) piezo scanning table with 80 μm x 80 μm (x 100 μm) scan range at nominal 1 nm positioning accuracy, mounted in objective scanning fashion or large area XY scanning table with sample scanning session centimeter range in step size of 25 nm and Z-stage with step size of 10 nm. LED white-light source for Köhler illumination, average operation time of 50000 h and 3 W. Polarization maintained single mode optical fibers for coupling of lasers to microscope. Objectives 10x, 100x, 50x (with large working distance and h). Spectral range between 300 and 1000 nm. Monochrome camera-1 inch 2048x2048 Pixel CMOS sensor, Global shutter, C-Mount, enhanced NIR sensitivity, glass filter, adapter for side ports, port for imaging sensors with a suitable focal length. Necessary software for operation and imaging. Inverted confocal Microscopy Extension including Transmission Beam-path for upgradation. Autofocus for local and global corrections on tilted or spherical surfaces

Components for excitation:

The computer controlled laser for picosecond pulses (internal repetition rates typically between 1Hz to 100 MHz) with CW operation mode and external trigger inputs with suitable software. Laser combining unit for combination of up to 3-5 internal lasers into one single mode fiber, adapters and beam adjustment elements, dichroic filter for combining 405 nm laser with the DPSS 532 nm laser (30 mW output power). Single mode fiber cable, polarization maintaining length ~2.0-4.0 m, cutoff < 400 nm, fiber core (4.0-7.0 μm), NA<0.11, output connector. Laserports for multi-wavelength couplers and laser couplers.

Pulsed excitation sources:

Laser for picosecond pulses (pulse width - < 35 ps), burst and cw operation (405 nm and 532 nm), incl. collimator and temperature stabilization, excitation filter for various ranges between 350 to 850 nm (laser clean-up), Power 45 mW or higher, CW laser source for 532 nm wavelength with power 25 mW or higher (solid state cooled), Fiber coupler, attenuator, and single mode optical fiber with FC/APC connector and other necessary accessories for both the lasers integration to confocal microscope.

Photoluminescence & Raman imaging with spectroscopic set up:

In a confocal setup, acquisition of PL spectra (~350-1050 nm) at selected areas / Micro PL, automated acquisition of PL spectra at each pixel, PL Spectral Resolution 0.06 nm @ 532 nm with a suitable grating, Raman spectral resolution 0.5 cm⁻¹ @ 532 nm in reflection geometry. Fiber coupling of confocal microscope with the high throughput lens based spectrometer (UV-Vis) with a focal length ≥ 300 mm (Spectral resolution 0.5 cm⁻¹, special resolution, 300 nm) for 350 nm to 830 nm spectral range. Three or more gratings (~300-1200 g/mm), a higher spectral range ~400-800 nm or higher. USB connection. Detector with QE ≥ 90% (~500-700 nm), Peltier cooling of CCD (back illuminated) chip with 1024x127 pixel (with 26x26 μm² or better) with USB connections. Raman filter set.

Electronic components:

TCSPC module for 405 nm and 532 nm and event timer with USB 3.0 connection, independent channels with 5 ps temporal resolution suited for 1 sync & 4 detectors or for 5 detectors, histogramming with 65536 time bins and 32 bit depth, incl. data acquisition software for Windows, TTTR mode and/or DLL library for custom programming, incl. SMA signal cables. Necessary adapter and cables, Computer with TTTR analysis and data acquisition licensed software, TTTR analysis and data acquisition software also include routine measurements, imaging, Antibunching detection and analysis etc.. cooled single photon detector. The specifications should also match:

Sl. No.	Specification	Value / Range
1.	Number of Channels	4 (inputs), 4 (outputs for ext. trig.)
2.	Trigger pulse width	>0.4 ns with rise and fall time ≤ 20 ns
	Clock rate	≥ 1 GHz
3.	Time bin width	5 picoseconds
4.	Timing jitter	< 30 picoseconds
5.	Dead time	< 650 ps in steps of 1 ns
6.	Maximum data processing	> 100 Million Events/second per channel
7.	Input voltage range	+/- 2.5V maximum
	Differential non-linearity	< 10 % peak, < 1 % rms
8.	Input pulse delay	1 picosecond to 1 millisecond (step size to be specified)
9.	Discriminator levels	+/- 2V maximum (step size to be specified)
10.	Output pulse format	TTL/ NIM (pulse width to be specified)
11.	Output pulse frequency	≥ 125 MHz
12.	Output pulse delay	100 picoseconds to 1 millisecond (step size to be specified)
13.	Maximum data transfer rate	≥ 100 M Events/sec
14.	Latency between input and output	Any latency between input and output to be specified
15.	Software to control and process data from the TCSPC	Must be included with capabilities for controlling, time-stamping, histogramming and programming
16.	Any cables, connectors or other accessories required to connect the TCSPC to the single-photon detectors	Must be included
17.	Warranty	Minimum of one year

Components for emission detection:

Multidetector unit, multimode fiber cable, fiber connector for multi channel detector unit, detector housing for complete optical setup, housing can host detection filters and dichroic, Beam splitting inset for detection unit, holder for up to 3 block filters and one dichroic, adjustable for optimal detection efficiency, photomultiplier detector assembly (single photon counting detector) with Spectral response from ~300 to 1050 nm, detection efficiency up to 45% @ 500 nm (or larger range), instrument response typ. <50 ps (FWHM), internal HV power supply, cooling and pre-amplifier, optical switch to switching between different fiber-coupled detectors and lasers, multi-mode fiber cable, output connector FC/APC.

Microscope optics for emission detection:

Single band dichroic beam splitter for transmissive from 425 to 1050 nm, reflective from 375 nm to 410 nm, Single band dichroic beam splitter for transmissive from <550 nm to 1050 nm and reflective from 405 nm to 532 nm, 50/50 Beam splitter with 50% reflection / 50% transmission, polarisation insensitive, operating range ~400-1050 nm, Long-pass filter with transmissive from 427 nm and blocking from 300 nm to 420 nm, Long-pass filter transmissive from <542 nm to 960 nm and blocking from 380 nm to 535 nm (the specifications of filtering wavelength range may vary), other essential microscope accessories. Please note that filter and splitter specifications and wavelength may vary upon the requirements.

Microscope accessories and standard sample:

Adjustment tool set, CVD Diamond Single-Crystal Standard for Reference Sample 2.6 x 2.6 mm size, 0.3 mm thickness, <100> edge for Photoluminescence (PL), Raman and TCSPC and Antibunching demonstration. Integrated Computer System with LCD Monitor for control and data acquisition of Microscopes, lasers, detectors etc. Rigid support frame.

Software functionalities:

In addition to above mentioned functionalities with software and measurements, the software should also provide: Raman TV: high speed movie-like image presentation of spectral dataset, also functional as preview option simultaneously with data acquisition, Fast determination of position, time and/or spectral correlation between various data objects, 2D and 3D color coded representation of any image data set (Raman, PL, scanning near-field optical microscopy, etc.) in selectable color schemes, Image Viewer: 3D overlay of images e.g. image with Raman chemical information, Spectrum peak finder and labeling, Easy Copy & Paste result export into external Programs for data Presentation, Spectra export to Raman database for convenient identification of sample components, Cluster analysis, Principal component analysis (PCA), Advanced fitting tool, Data cropping and reduction, Graph demixer, Image correlation, Various filter e.g. Fourier, Anisotropic, Edge, Sharpen, Customized filters and many more, Graph and image repair, Image overlay, Non negative matrix factorization.

Free Installation.

Optional Items:

Oil immersion objective 100x.