INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A & 2B Raja SC Mullik Road, Jadavpur, Kolkata 700032, India

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B , Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No.: IACS-G/BCBBD/2023-24/59 Date: 9/2/2024

Sealed tender in two bids system (**Technical Bid & Financial bid**) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for supply and installation of **STED super-resolution microscope** with necessary accessories and consumables.

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelop, that should be sealed and superscribed with tender notice no. and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of the **Registrar, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata-700032** on or before the scheduled date and time specified below:

Tender Notice No.	**NIT No IACS-G/BCBBD/2023-24/59 Date: 9-2-2024**
Last date and time of submitting tender	**29.02.2024 (1.30 PM)**
Pre-bid meeting (**online mode**) to discuss technical specification and detail presentation by the representative(s) of the interested companies on the technical specifications of their instrument and application with representative data acquired in their instrument elsewhere.	**26.02.2024 @3.30 PM through online mode** (Interested bidders need to send participation request before **23/02/2024** to pcbbd@iacs.res.in; Meeting link will be sent upon receiving the request)
Date and time of opening tender (Technical Bids)	**29.02.2024, at 3.00 PM**
Place of opening tender	**IACS Meeting Room**
Date and time of opening of Price Bid	The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.
Contact	Email: pcbbd@iacs.res.in Tel.+91 33 2473 4971 [Ext 2108]

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

Technical Bid Evaluation: The Technical Bids will be evaluated in the presence of the representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.
Please note that IACS will not provide any accommodation or reimburse any expenses to any of the bidders for attending opening of technical bid.
Quotations received incomplete or beyond the stipulated time will be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research Institutes/Universities/other organizations in India and abroad. Please provide documentary proofs of such successful installation and supportive documents that the instruments are running successfully.
For evaluation of L1 (least price) amongst the technically qualified bid only, the price of optional item will be considered in the event the committee decides to procure it. If the committee decides not to procure the optional items, then the cost of those optional items will not be included in evaluation of L1.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly superscribed as 'TECHNICAL BID' on the outer cover of the envelop as already detailed above. **It should be clearly mentioned on the envelope as "Technical Specification for STED super-resolution microscope".**

Technical specifications for STED super-resolution microscope	
A	Super-resolution microscopy system for fluorescence imaging of various samples like live cells, viruses, tissues, Drosophila, microbes, Bacteria, plant tissue, and different types of solid or liquid fluorescence materials.
B	The system should have a fluorescence LIFE-TIME based STED resolution improvement facility.
C	The fully automated confocal-super-resolution system should be capable of highly sensitive spectral imaging, FRET, and FRAP experiments of fixed and live biological samples.
D	The system should include multichannel fluorescence imaging, Z-stack, co-localization, FRAP, photo-activation, and time-lapse imaging.
E	The system should be able to carry out confocal microscopy imaging as well as STED imaging with the same software.
1. Microscope System	
	1. A) Research-grade motorized inverted microscope:
a)	The microscope body should have built-in motorized Z movement with a step size of at least 5 nm or better, with automatic refocusing to allow long-term drift-freeimaging.
b)	Dedicated TFT / LCD touch panel control for the microscope.
c)	It should have motorized beam path selection between eye observation and confocal/STED imaging.
d)	The microscope should have suitable LED illumination for transmitted light (Bright field & DIC) applications.
e)	Illumination Source: LED for fluorescence (at least 3000mW).

f)	Motorized 6-position condenser with DIC prisms for all objectives with the analyzer, polarizer and DIC slider.
g)	Fully motorized fluorescence turret with bandpass fluorescence filters (Appropriate Filter Cubes) for DAPI, FITC/GFP, TRITC/Rhodamine & Cy5 fluorescence.
h)	A motorized XY scanning stage, part of the system, should come with universal sample holder attachments for glass slide, 35 mm imaging dish, Petri plates and multi-well plates. It should have navigation (whole-slide overviewing) and multiposition imaging capabilities.
i)	A dedicated galvo Z-stage should be quoted for precise and fast z-movement.
	1. B) Objectives:
a)	10X Objective Lens, apochromat, NA = ~0.4
b)	20X Objective Lens, apochromat, NA = ~0.75
c)	40X long working Objective Lens, plan apochromat, NA = ~0.6
e)	63X oil immersion Objective Lens, plan apochromat, NA = ~1.4
f)	100X Objective Lens with NA = ~1.4 chromatically corrected for STED imaging
2. Scan Head	
a)	Should be having at least 3-axis Galvano scanning mirrors
b)	Beam scanning in XY and piezo/galvo scanning in Z for 3D imaging
c)	Galvo scanner with a line frequency of up to 2.6 kHz or more
d)	Should perform software-controlled fully automated beam alignment
e)	Beam position & angle should be independently addressable
f)	Image rotations up to 180 degrees or above the field of view (FOV)
g)	Image tiling and reconstruction in 3D
h)	Suitable for wavelengths ranging from 410 nm to 850 nm and prism based dispersion mechanism to make the system completely spectral in nature
i)	The FOV of the system should be 22 mm or more
j)	Should be capable of capturing images at different resolutions from 16 x 16 pixels up to 8K x 8K pixels (64 Mpixels)
k)	Imaging Speed: at least 10 fps (frames per second) in the 512 x 512 pixel mode using a galvo scanner
l)	AOTF/AOM controlled synchronization with laser pulse sequence
m)	m) Also quote for the required hardware/module to enable the system as a fluorescence LIFE-TIME based species separation system and gated detection facility to separate signals from autofluorescence. The pulsed laser for the fluorescence LIFE-TIME based contrast imaging/species separation should cover the excitations of all the dyes, including blue, green, yellow, orange and red excitations. It should be able to do spectral profiling for excitation wavelengths as well as with the standard emission spectral profiling. It should also be able to perform lifetime-based FRET experiments.
3. Detection System	
a)	Motorized computer-controlled continuously variable confocal pinhole
b)	The system should have at least 3/4 built-in point spectral detectors for 3/4 colour simultaneous detection facility
c)	All detectors must be high-sensitivity Power HyD detectors and should have photon counting capability

d)	All detectors must be built in inside the scan-head and must be spectral in nature.
e)	Should have a gated detection facility to eliminate unwanted photons.
f)	The system must have a transmitted light PMT detector and be compatible to capture DIC images
4. STED Module	
	The system should perform the super-resolution imaging of fluorophores and proteins using the STED principle. The system should be suitable for imaging fixed and live samples and have the following features.
a)	Pulsed excitation laser-based STED module
b)	Optical Resolution: Less than or equal to 50 nm
c)	The system should have a fully automated beam alignment facility to ensure optimum super-resolution system performance at any time
d)	Simultaneous multicolour super-resolution imaging (at least two different fluorophores) should be possible.
e)	The speed for super-resolution should be at least 8 to 10 fps @ 512 x 512 pixels
f)	The system should be able to capture clear and good quality super-resolution images up to 50 µm deep inside any tissue or thick samples
g)	The system should have a Gated STED (g-STED) detection facility for reducing light stress and increasing resolution. The gate of the detector must start at ≤0.5 ns.
h)	The system should have a fluorescence LIFE-TIME based STED resolution improvement facility.
i)	Notch filters for individual STED lasers should be there
5. Laser Module	
a)	**Excitation Lasers:**
	1) 405 ± 5 nm; cw; Average Power: 50 mW; necessary filters and adapters
	2) White light Laser: Wavelength continuously tunable between 485 – 685 nm; Average Power ~1.5 mW or greater per wavelength; should be fitted with AOBS (or AOTF) for precise selection of excitation wavelengths OR ~488 nm; ~ 514 nm; ~561 nm; ~594 nm; ~640 nm and ~680 nm monochromatic pulsed lasers, with narrowband dichroic for each and every laser line.
b)	**STED Lasers (high power depletion lasers):**
	o 592 ± 5 nm; Average Power: >1200 mW, CW or Pulsed @ 75 MHz or above
	o 775 ± 5 nm; Average Power: >1200 mW, Pulsed @ 75MHz or above
	o High-power AOM/AOTF for ultrafast power control for the STED laser
	o Fast Iris Shutter, Precision Optics and Optomechanics for the STED Laser
	o Notch filter for coupling of individual STED laser(s)
c)	Should have auto-alignment capability of all excitation beams, lasers and other optical components for super-resolution imaging, enabling user-friendliness and ease of use at optimum performance.
6. High-Resolution Module	

a)	Additionallly the system must be equipped with another fully automated and integrated online super resolution (SR) attachment with highly sensitive (QE/PDE >45%) or dedicated SR detector for complete VIS spectrum. Should be able to achieve a lateral resolution 120-140 nm in XY and axial resolution 200 to 300 nm in Z.
b)	Scan resolution should be at least 8Kx8K or better per channel and should reduce to 16x16 resolution.
c)	All the objectives and laser lines used in the confocal mode should be able to be used in the super resolution mode and throughout the whole spectral range.
7. Software	
a)	Should control all motorized functions of the microscope, excitation and depletion lasers, and all parameters of image acquisition and image analysis, both in confocal and super-resolution mode.
b)	Should save all instrument parameters (metadata) along with the image for reproducibility of experiments.
c)	The imaging software should control all motorized functions of the confocal microscope and multi-dimensional acquisition.
d)	Standard geometry measurements like length, areas, angles, etc. The intensity measurements should be a standard feature of the software.
e)	Should perform real-time/online spectral imaging, multi-point imaging, image stitching/auto montage, macro imaging, and deep tissue imaging. It should support future upgrades with HDR imaging capability and spectral unmixing.
f)	Co-localization with histogram analysis, intensity profiles for quantification etc. Should support multi-export formats for data output.
g)	Advanced measurements like FRET (Ratio, acceptor photo-bleaching and sensitized emission and lifetime-based FRET), FRAP, Photo-Activation, and Co-localization should be possible. Co-localization, FRET, and FRAP analysis should be part of the software.
h)	Raw data should be made available to the user for independent data processing.
i)	Software should be capable of 3D rendering of images, i.e. provide for 3D visualization.
j)	Deconvolution software to further improve the Confocal and Super Resolution images.
8. Optical Table	
	A suitable imported optical table to be provided with the setup for super-resolution microscopy as per following specification:
	1. Vibration free with active air compressor control.
	2. Dimensions of table frame: At least 900 mm (L) x 900 mm (W) or equivalent with an appropriate height.
	3. Honey-combed table-top with M6 Grids with labels.
9. PC Workstation (Online)	
	The system should be supplied with the latest and compatible computer workstation with a minimum configuration as mentioned below.
	OS: Windows 10 or 11 Pro/Enterprise
	Processor: Intel Xeon Gold processor with 8cores/16 threads; Base frequency of 3.4 GHz and Turbo Boost frequency of 4 GHz

	Storage: o Fast 256GB SSD for OS (Windows) o Additional temporary storage: Very fast 2TB SSD o Additional user storage: Fast 6TB SSD or HDD (7200 rpm)
	RAM: 96 GB DDR4
	Optical Drive: Super Multi drive, up to 16x speed
	Graphics: NVIDIA RTX A5000 16 GB Graphics
	Intel network adapter
	Thunderbolt ports
	Monitor: 37" UHD LED 4K monitors
	Keyboard, Mouse and Mouse pad
	Suitable table for the computer workstation
	Data processing unit for regular image analysis
10. CO2 incubator for Live-cell imaging (Cage Type)	
	(i) Stage top incubator chamber
	(ii) Temperature controls up to 40 °C or above
	(iii) Control of CO2 gas
	(iv) Control of Humidity
	(v) Should have an 'Objective Lens Heater'
	(vi) Seamless integration into the microscope system
	Optionally quote for a complete microscope-enclosure/cage incubator.
11. Offline PC for image analysis	
	Vendor should provide an appropriate offline PC along with essential software and a dongle for image analysis. The PC should meet the minimum configuration requirements specified below.
	· OS: Windows 10 or 11 Pro/Enterprise
	· Processor: Intel processor with processor base frequency of 3.00 GHz (6 cores / 6 threads)
	· Storage: o Fast 256GB SSD for OS o Very fast 512 GB SSD for temporary storage of data o Fast 4 TB HDD (7200 rpm) for storage of data
	· RAM: 32 GB (16GBx4) DDR5 4400 MT/s
	· Optical Drive: Super Multi drive, up to 16x speed
	· Graphics: Nvidia Quadro RTX 4000 graphics card with 8 GB graphic card memory
	· Intel network adapter
	· Thunderbolt ports
	· Monitor: 32-inch UHD LED 4K resolution monitor
	· Keyboard, Mouse and Mouse pad
12. Delivery and installation	

	All components should be supplied at the same time. Quotation should include pricing for each module. In the event of any potential delay the expected delivery and installation date for each component should be mentioned.
13. Dedicated in-house technician	
	Vendor should provide a fully trained in-house technician dedicated to NCCS whose salary is paid by the vendor for 3 years.
14. Accessories	
a)	A suitable ≥5KVA online UPS of 3-phase in 3-phase out should be provided to support the complete system for minimum 30 minutes.
b)	Vendor should provide a branded Dehumidifier with the capacity of ≥60 Liters.
c)	STED specific Fluorescence Dyes should be supplied.

- **All essential consumables required for sample preparation during training and demonstration need to be provided.**

- **Warranty:**

Three (3) years of comprehensive warranty should be provided on entire microscope system including lasers and detectors. In the event of a system malfunction or breakdown, the resulting downtime will lead to an extension of the warranty period. Additional 2 years AMC should be included. The vendor should also quote for further 5 years Annual Maintenance Contract (AMC) and Comprehensive Maintenance Contract (CMC) separately after the expiry of initial period of warranty. Taxes as applicable will be deducted at the time of payment of AMC/CMC amount.

- **Service:**

Past installation history of the said equipment in India. It is desirable that adequate number of installations by the company have been fulfilled in India and the instruments are in running condition. Notably, the company must have expert service support specifically for the said equipment in India.

*Installation and Application Training by factory trained personnel.

*Any other equipment/device/tools whichever are necessary for installation and operation of the complete System.

* Tender will not be accepted if the technical compliance chart is not provided following the given format below:

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

Important notes:
i) Vendor should quote rates involved, if any, for the Optional Items/services mentioned separately.
ii) Bidder providing misleading or wrong information will be disqualified
iii) All technical claims of the Bidder should be supported by product catalogue, public website of the manufacture.
iv) Qualified vendor will be required to undertake the room refurbishment for proper installation of the system. IACS will provide the space with electrical connection. The vender will be required to install the necessary tables and other furniture as required by the instruments.
v) The above-mentioned technical specifications are highly desirable. However, the Institute reserves the right to go for customized specifications taking into considerations its financial constraints and technical preferences.

2. PRICE/ FINANCIAL BID
The financial bid indicating (item-wise) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly super scribed as 'PRICE BID' on the outer cover of the envelop as already detailed above. Price bids of only technically qualified bidders will be opened and they will be intimated the date and time of the opening of price bid at their e-mail ids. Rest of the bidders will stand rejected.
PRICE: Price to be quoted on INR (The Indian Rupee).
3. BID SECURITY:
a. An Account payee Demand Draft/Pay Order of Nationalized Indian Bank for Rs. 15,00,000 (Rupees fifteen lakh only) drawn in favour of "Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN000093, MICR Code: 700002048)" is to be furnished by the bidders along with Technical Bid except Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department, as Bid Security money or Earnest Money Deposit (EMD). Alternatively, the Bidder shall have the option to furnish the EMD in the format of Bank Guarantee (BG) of any Indian Nationalized Bank preferably located at Kolkata.
b. The Demand Draft for the Bid-Security should have at least about 90 (ninety) days validity period of opening of the bids.
c. In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

4. PERFORMANCE SECURITY:
An Account Payee Demand Draft on any nationalized bank of India or Bank Guarantee (BG) of any Indian Nationalized Bank preferably located at Kolkata of 3% of the order value in the name of "Indian Association for the Cultivation of Science" is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money or EMD will be refunded to successful bidder on receipt of the Performance security money.
5. TERMS OF PAYMENT:

Payment will be made through irrevocable Letter of Credit in two installments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument.

6. GENERAL INSTRUCTIONS:

1. Validity of tender: Tender submitted should remain valid for at least six months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall be lapsed by mutual consent.
2. The tender should accompany a compliance chart.
3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.
4. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the institute website. Prospective bidders are advised to occasionally to visit the website (www.iacs.res.in/tender) for any amendment.
5. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.
6. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. Response time should be within 24 hrs.
7. The model number, make and a printed literature of the product should be submitted positively.
8. Proposed delivery schedule should be mentioned clearly.
9. Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
10. Authorized dealership certificate should be provided in case of principal manufacturing company is not quoting directly.
11. Guarantee certificate, users' manuals etc. are to be handed over to the user after successful commissioning of the system.
12. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
13. In case of any dispute, the decision of IACS authority shall be final and bidding on the bidders.
14. For any clarification regarding technical specifications, information etc., please send your queries to pcbbd@iacs.res.in
15. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Registrar