Global Tender Notification for the procurement of <u>"Spinning disc confocal head, Solid state lasers with a combiner and Real time controller of the existing widefield microscope"</u> at the Indian Institute of Science, Bangalore (Last date of submission of tenders: 25-07-2023)

(TENDER FROM GLOBAL VENDORS)

Date: 04.07.2023

Dear Madam/Sir:

Please send your 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 25-07-2023.

The Chair

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Spinning disc confocal head, Solid lasers with a combiner and Real time controller of the existing widefield microscope

General Specifications:

Technical and commercial bids are invited for the micro lens based dual spinning disc laser scanning confocal microscope. The vendor should quote for an upgrade to the existing Olympus IX83 fully motorized inverted fluorescence microscope with CooLED PE 4000 LED light source, Photometrics Prime BSI back illuminated SCMOS camera, Tokai Hit on stage CO2 incubator and Olympus CellSens multidimensional image acquisition, image processing and Image analysis software.

The vendor will be responsible for installation, integration and satisfactory demonstration of full system control and operation with user's specimen. The vendor should also provide post-sale training and support during warranty period for all the components that they provide through third party integrate. They should also have similar installation bases (minimum 3) in working condition supported by satisfactory installation and performance certificate preferably in India (more details are given below of this tender document).

Technical Specifications:

A) Spinning disc confocal head and Real time controller (Essential).

1) i) Fully automated and motorized micro lens based Spinning disc confocal system suitable with motorized inverted fluorescence microscope with suitable imaging software for multidimensional image acquisition in widefield, confocal modes.
   ii) Back illuminated water cooled Scientific CMOS camera with cam link,
   iii) 16 line LED light source, controlled by the imaging software for multidimensional imaging.
   iv) On stage CO2 incubator, with touch screen panel to control all the parameters.

The operation for all the components for image acquisition should be fully automated and motorized. The scan head should support onsite upgradation of two colour simultaneous imaging (dual camera or image splitter).

The system should be upgradable to real time/instant super resolution image with a minimum XY resolution of 120nm nm or better.

2) The scan head should have a built in 8-10 position fast emission filter wheel with emission filters for DAPI, FITC, TRITC &/ mCherry and Cy5 and two-color imaging for GFP & RFP. The scan head should have a built in 1X c mount coupler. It should have a three-position motorized beam splitter with widefield bypass mode for epi-fluorescence imaging with all the emission filters and LED light source automatically. The system should easily be switchable between Widefield, Confocal and Super resolution (post upgrade) in real time without closing the software.

The system should be onsite upgradable to online/real time hardware based super resolution imaging with an ability deliver 120nm XY resolution on the go.

The offered system should not have any realignment issues when the optical path is changed. A disk achieving the required scan speed of 4000 rpm and above with 200 fps or above will be preferred at a resolution of 2K/2K pixels. The design of the 40/50um pinhole should ensure maximum confocality achieved with the modern, commonly used, high NA 60x and 100x oil immersion objectives.

3) Four independent narrow band pass emission filters for the entire Vis spectrum should be available.(DAPI (410-450nm) , GFP (510-550 nm) , RFP/mCherry (570-630nm) and Cy5 650-700nm) All laser lines for confocal imaging should be useable for imaging in the super resolution mode in future. A dual band pass DM and emission filter for GFP, RFP, mCherry & Cy5) should be offered for three color fast sequential imaging. Suitable primary DMs (405/488/561/640) in the scan head should be offered.

4) A Real-Time controller: The controller should provide parallel command execution for motorized components such as LED/Laser switching, shuttering, swift movement of filter wheel and Z movement during fast two colour XYZ time lapse imaging. The device should support fast two colour near simultaneous imaging using single camera with perfect over lapping of two colours. The process of closing the shutter and moving the filter wheels & Z steps should begin as soon as camera acquisition is done, during camera chip readout to avoid bleaching. Both filter wheel and laser/LED should switch/move in parallel to save time during two colour imaging using single camera for perfect overlapping two colours during fast time lapse imaging (for fast two-colour imaging of dividing/budding yeast cells).

B) <u>Laser modules with AOTF/Direct Modulation to control all solid-state lasers (Essential).</u>

1) 488 nm, 565/561 nm and 640nm. All lasers should be connected to the scan head and should be controllable for fast laser switching and attenuation. Laser lines should be 100mW or better. All the solid-state lasers should have a minimum a lifetime of at least 10,000 hrs. The laser combiner and the optical fiber quoted should support future upgradation of 405/445/514 nm laser. The system should have capability to accommodate lasers in the visible to Near-Infra red range.

C) <u>System control and Imaging Software (Essential):</u>

1) Software should be capable of controlling every component of the system including microscope, incubation system, confocal setup, and super resolution module. Should be compatible for 3D, 4D, 5D and 6D imaging (X, Y, Z, t, multi color, multi point). Image stitching in co-ordination with XYZ stage.
2) FRET imaging as well as Quantitative data analysis capability
3) Advanced 3D image reconstruction with rendering from a Z- stack image series including 3D Blind deconvolution capability in widefield, confocal and Super resolution deconvolution modalities (for all the three PSFs).
4) Co-localization and histogram analysis with individual parameters.

5) Software for Tracking: Interactive processing and visualization and analysis software for 3D and 4D microscopic images. Featuring state of the art volume and surface rendering, object detection, tracking and cell division tracking tools.
6) Image acquisition and processing tools for super resolution images with various modes of visualization.
7) Offline Analysis Software with 3D Deconvolution should be provided.

D) <u>Training and Warranty</u>

1. On-site installation and training.
2. 5 years complete system warranty.
3. The above-mentioned technical specifications are highly desirable. The Institute reserves the right to go for lower specifications taking into considerations its financial constraints and technical preferences.

Terms and Conditions:

1. The quotations should be submitted in two bids system; i.e., Technical bid, and Commercial bid.

a. 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. Please also include warranty terms and any other information on upgradation terms in the technical bid.

b. The commercial bid must include the price of the instrument in Indian/Foreign currency indicating break up of:

F. For goods:

i. Price (CIF, Bangalore). Applicable Custom Duty will be borne by the Institute.

ii. Installation, commissioning and training charges, including any incidental expenses, if any

iii. Agency commission charges, if any

iv. Provide certificates for country origin of manufacturing for each line item.

II. Price of every line item in the commercial bid should be quoted along with the total quoted price for the instrument to be operational (fixed and ready to use) in our facility.

c. Both the Technical and Commercial bid should be put in separate sealed envelopes, and put together in another cover stating, "Spinning disc confocal head, Solid lasers with a combiner and Real time controller of the existing widefield microscope" and should reach us on or before 17:00 hours 25-07-2023.

2. The vendor should have a good track record of having previously supplied "Spinning disc confocal head, Solid lasers with a combiner and Real time controller of the existing widefield microscope" in India or abroad (please furnish details).

3. The vendor should have qualified technical service personnel based in Bangalore capable of servicing the equipment.

4. The quoted components should be a catalogue product of the bidding company.

4. The payment will be through a letter of credit.

5. The lead time for the delivery of the equipment should not be more than three months from the date of receipt of purchase order or two months from the date of receipt of Letter of Credit details (whichever is earlier).

6. The validity period of the quotation should be 90 days.

7. Import code of the items should be indicated.

8. If the goods 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 should be correspondingly extended.

9. The purchaser reserves the right to accept or reject any bid and to annual 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.