CORRIGENDUM

IGIB/5-1NC/102/24-25(413) 23.08.2024

A Global Tender in two bid system with Pre-bid meeting for the supply, Installation & Commissioning of High Speed Laser Scanning Confocal Microscope with Live Imaging Facility was floated vide Tender ID No. 2024_CSIR_204281_1 on 08.08.2024.

After the pre-bid meeting on 20.08.2024, the technical specification has been revised. All prospective bidders are requested to submit their bids as per revised specification.

22/08/2024

Stores & Purchase Officer

Instrument: High Speed LASER Scanning confocal microscope with Live Imaging Facility

System should be well suited to perform wide applications for a central facility, which must include bioimaging applications like live cell imaging, FRET, FRAP, photo-activation, and should be capable to perform fast imaging while maintaining large field of view with confocal quality, and further enhanced hardware-based resolution enhancement.

Only one model should be proposed and that should be the latest model from the manufacturer. Detailed specifications are as follows:

1. Inverted Microscope

a. Bright field, Fluorescence and DIC illumination with accessories for confocal scan head attachment

b. Motorized beam path selection for visual and confocal imaging,

c. Motorized Z focus drive with minimum stable resolution of 10 nm or better

d. Display status and control of microscope on screen/monitor

e. 6 position or higher motorized FL filter wheel, 6 positions motorized DIC nosepiece .

f. Motorized encoder/high precision based XY scanning stage for the movement of specimen using external hardware controller panel/joystick as well as total control by the confocal software

g. LED illumination for transmitted light.

h. High resolution High N.A objectives 4x/5x (N.A. 0.15 or better), 10x (N.A. 0.45 or better), 20x (N.A. 0.75 or better), 60x-63X oil immersion (N.A. 1.4 or better) 100x oil immersion (N.A. 1.4 or better).

i. LED Fluorescence Illumination 15000 hours of life for fluorescence observation, filter for Fillipin/DAPI/FITC/Texas RED/CY5 must be offered. LED should include 365nm/385 and White light wavelength.

j. DIC attachment motorized for 10x to 100x objectives with analyzer and polarizer
attachment, sliders and modules for the respective objectives.

k. Microscope system should be equipped with hardware based Focus Drift compensation technology having LED/IR (640 nm or higher) based mechanism for Continuous Focus correction monitoring system for long-term, time lapse imaging experiments.

l. System should be quoted with On-stage Incubation system with facility to control Humidity / Temperature / CO2 etc. Incubation system should be able to be controlled by the software. CO2 and air cylinders should be provided along with the system.
m. High-performance imported vibration free table with active real time air dampening should be provided for the microscope system.
n. High Resolution monochrome sCMOS camera with 4 Million pixel or better resolution. Camera should have more than 80% Q.E and should be able to control from Confocal software.

2. <u>Confocal Scan Head and Detection System</u>
a. High transmission efficiency optics for confocal.
b. The system should have Hybrid Detection Technology capable of working in intensity and Spectral mode having at least 4 GaAsP/HYD (or better) based 45% Q.E or better as detection system for 4 color simultaneous image acquisition. At least two of the detectors should be in spectral mode.
c. Computer controlled continuously variable single pinhole system, which should cover wider area of one Airy unit for higher brightness and without affecting sectioning performance.
d. Hybrid scanner with high resolution and high speed scanning capability wherein Galvano scanner speed should be atleast 8-10fps @ 512 x 512 and line scanner/resonant scanner (or equivalent) should be able to reach at least 13 fps @ 512 x 512.
e. Confocal System should have minimum 20 mm FOV or better imaging capability enabling capture of large samples and multiwell scanning in less time.
f. System should have 4k x 4k or better resolution for all channels.
g. System should possess efficient dichroic mirror with low angle incidence for better transmission efficiency.
h. Scan zoom range 1X – 40X or more continuous variable. Should be adjustable in small steps.
i. Transmitted light detector to be provided for capturing bright field and DIC images.
j. System should have spectral resolution of 5 nm or better.

3. **<u>Super Resolution</u>:** An array or multipixel detector based solution coupled with online reconstruction of super-resolution image. Image resolution in XY should be at least 120 nm or better & Z- 350nm or better. Super Resolution system should be capable to perform efficient imaging on Low light samples and also should be capable to achieve such resolution in samples as thick as 100 μm (or better).

Spectral or filter-based scan head should be available for this mode. If filter based, both quad band and single band pass filters should be available.
Resolution improvement should be based on High sensitivity hybrid/array detector/multipixel photon counting detector or equivalent. This should be mentioned in the manufacturer's brochure or website.

4. Lasers: Pre-aligned Solid state laser launcher with at least 15 MW or better laser power:

a. Solid state 405 nm/408 nm for DAPI and for photoactivation and photoconversion
b. Solid state 445 nm/448 nm/458 nm for CFP
c. Solid state 488 nm for Alexa 488/GFP fluorophores
d. Solid state 514 nm for YFP
e. Solid state 555/559/561 nm for TRITC, Rhodamine, Texas Red, mCherry, PI fluorophores.
f. Solid state 633 nm/638 nm/640 nm for Alexa633, DRAQ5, Cy5 fluorophores
g. All the visible laser lines should be controlled through AOTF/direct modulation for laser attenuation and switching in synchronization with scanner.

5. Computer Workstation (Factory Recommended)

OS: Windows 11 pro, 64 Bit English version .
CPU: Intel Xeon Silver or Gold series (12 core) or better
RAM: 64 GB DDR4 or better
1st : SSD 512x GB M.2.
2nd: SSD/HDD M.2 4TB
Optical Drive: Super Multi drive, upto x 16 speed.
LAN: 10/100/1000network interface x 2
Extension Slot: 2 PCI express 3.0 x 16 slots (one slot for Graphics)
Graphics : NVIDIAQuadro RTX A4000 or better
Monitor : Large 30" monitor or 2 x 27" (or better) monitors LCD TFT (OLED 4K x 4K or better)

Suitable online UPS to support the complete system (not less than 5 KVA) with minimum 30 minutes back-up time

6. Confocal Software

a. Basic image acquisition, Complete microscope control, Scan head control and Laser control software

b. Saving of all instrument parameters along with the image for repeatable/reproducible imaging
c. Frame/line/lambda capturing, Z-Stack, Time series imaging capabilities
d. ROI bleach for FRAP experiments
e. FRET Imaging ,Calcium Imaging.
f. Co-localization analysis and volume rendering
g. Real time ratio-display and Real time spectral Unmixing.
h. 2D and 3D image deconvolution
i. Diverse measurement and statistical processing
j. Artificial intelligence functions having license for lifetime for image analysis and quantifications, 2D/3D segmentation & out of focus haze removal from images.
k. System should be capable to adjust automatically gain and laser power based on type of sample being used to avoid any saturation
l. Software should be capable to record Live graphs of different Live cell imaging experiments parameters as that of recorded data.
m. Offline software for quantification along with Suitable workstation (at least 16GB NVIDIA RTX A4000) must be provided.

7. 5 year warranty (including warranty for lasers).