पादप कार्यिकी संभाग
DIVISION OF PLANT PHYSIOLOGY
भा.कृ.अ.प.–भारतीय कृषि अनुसंधान संस्थान
ICAR-Indian Agricultural Research Institute
नई दिल्ली–110012 (भारत)
NEW DELHI - 110 012 (INDIA)

फाईल संख्या: **21-7/AIC/CM/24-25/SFC**

दिनांक: **07-02-2025**

शुद्धिपत्र
CORRIGENDUM

With reference to GeM Bid No : GEM/2025/B/5815815 dated : 13/01/2025. The specifications have been revised/updated. The other terms & conditions will remain the same.

7/2/2025

Administrative Officer

Specifications for Confocal Microscope with accessories after the review of the suggestions in the pre-bid meeting against the Gem Tender: GEM/2025/B/5815815 / Confocal Microscope.

A. General Specifications

1. The imaging workstation in confocal microscope should include highly sensitive spectral, compact, linear scanning confocal system with detectors, electronics, and scanners for versatile imaging of many different samples like, imaging for plant samples, cell biology applications, protein-protein interactions, imaging of cell culture and tissues, live cell imaging, multidimensional imaging, FRET, FRAP, photactivation , calcium imaging, etc.
2. It should have optical slicing capabilities, should include multichannel fluorescence imaging Z-stack, time-lapse imaging, aadvanced 3D imaging and photon counting/Analog Counting experiments.
3. It should be be capable to perform fast imaging while maintaining large field of view and good image quality etc.
4. The imaging workstation can be tailored to our application. The complete system should have optimized communication between all the different components and is supplied via one company.
5. Latest 64 bit control computer with Intel Xeon Processor, DDR RAM 64 GB or better, HDD: 4TB SATA or better, DVD, SuperMulti SATA +R/RW, Graphics card 16 GB or better, Gigabit Ethernet, Windows 10 64 bit or advance with latest MS Office pre-loaded; USB 2.0/3.0, Fire wire. 32" X 2 LCD TFT monitors/34 inch Curved 4K monitor ; Suitable online UPS to support the complete system (not less than 5 KVA) with minimum 30 minutes back-up time.
6. A dedicated support team should be available for installation and support as we grow with the system.
7. The equipment should be CE or equivalent certified.
8. Before delivery, the system should be fully integrated within factory.
9. Proof of installations in Reputed Institutes should be provided
10. At the time of installation, the company should provide full demonstration of the system and training (minimum 5 days) to the specified IARI staff members/ students in operating the system.
11. The system should come with comprehensive standard warranty of minimum 2 years. Additional 3 Years warranty should be quoted in Option.
12. The company should provide an affidavit committing to shift the system from initially installed venue to another venue at no extra cost, as and when asked by IARI- once in the lifetime of the system.
13. A suitable anti-vibration table preferably from the microscope-manufacturing factory/ factory recommended.

B. Technical Specifications:

1. **Confocal Microscope Type** – Microscope should be **inverted with motorized frame** to cater to different research needs.

2. Fully Motorized Inverted Fluorescence Research Microscope for bright field, fluorescence and Differential Interference Contrast (DIC) illumination, preferably with dedicated touch screen / TFT/Touch button for controlling motorized components of the microscope.

3. **Confocal Microscope should have DAPI, FITC,TRITC and CY**-5 filters with LED illumination for observation

4. **Optical and Spectral Performance:**
   A. Spectral range should be 410nm-650nm or better.
   B. Emission filters should be motorized spectral detection.
   C. Spectral unmixing - software should be supported for multiplex imaging of /unmixing fluorescence with overlapping spectra.
   D. It should have motorized Z focus drive with better resolution.

5. **Imaging Modes:** Imaging Modes: Microscope should have multiple imaging modes like confocal, widefield, transmitted light and fluorescence imaging using Objectives 10X 0.40 N.A or better, 20X 0.75 NA or better, 40X NA 0.85 or better, 60 X/63X oil NA 1.40 or better, 100X Oil NA 1.40 or better

6. **Field of View (FOV)**: it should have good field of view options available (20mm) or better.
7. **Solid State Laser module should be :** Microscope should have minimum 4 Lasers:
   A. 405 nm
   B. 488 nm
   C. 561 nm
   D. 633nm/638nm/639nm/640nm

8. **Scanning Technology**: confocal microscope system should use Field of view Scanner/ Galvano Scanner/Linear Galvo Scanner with simultaneous spectral detection with scan speed should be 8-10 fps or better @ 512x512 and should be able to increase up to 120-130 fps@512X16 or better

9. **Laser Power and Illumination :** Microscope should have high power LED for uniform illumination

10. **Laser Range:** it should have a laser range/spectral range (410-600 nm or better) with LED.

11. **Resolution**: Microscope should have super-resolution with XY resolution/lateral resolution 120 nm or better.
12. **Detectors** : The Microscope Should have 4 or more detectors as 2 GAsP PMT /HyD Detectors and 2 Multi alkali PMT for super resolution imaging
13. **Software**: it should contain the features as-
    A. **Real-Time Imaging**: Enables fast acquisition of images for live-cell imaging and dynamic studies.
    B. **3D and 4D Imaging**: Supports volumetric imaging and time-lapse to analyze cellular processes in 3D and 4D.

C. **Image Analysis**: comprehensive imaging software with all required modules for image analysis.
D. **Automated Features**: Software should have automated features.
E. **Live Imaging**: microscope should support **live-cell imaging**, optimized for different speeds and resolution demands.

14. **Laser Range:** it should have a laser range/spectral range (410-600 nm or better) with LED.

15. **Pixel size:** Microscope should have a configuration of Scan/scanner resolution pixel 8k or better with adjustable pixel size for fast imaging.

16. Microscope system should have the FRET/AOTF and FRAP (fluorescence recovery after photo bleaching).

C. Desirable Specifications :

1. Shift free DIC accessories for all objectives.
2. Scanner unit should have laser ports for at least 4 lasers to be integrated with the system. Lasers should be used during experiment otherwise switched to standby mode to help preserve the sample.
3. Absolute linear scanner movement to ensure equal pixel dwell-times as a prerequisite for any quantitative study. Constant Scanner monitoring and feedback positioning for artifact-free, fast, and reliable scanning, also in bidirectional mode.
4. Ai Based Technology to adjust laser power and detector Gain Should be available
5. The microscope, laser, scanning module, and additional accessories, along with data acquisition and synchronization is managed through real-time electronics utilizing an oversampling read-out logic. The data transfer between the real-time electronics and user PC is via LVDS/ similar technology with the ability to evaluate the data online during image acquisition. Superior multi-threaded software architecture should allow changing imaging parameters even while the instrument is scanning.
6. The microscope system should be upgradable with a fully programmable and computer controlled onstage incubation system with temperature, humidity, CO_2 Control.