

Final specifications are mentioned below.

High resolution Confocal Microscope

The confocal microscope should be the state-of-art technology suitable for live and fixed biological samples. The system should be highly sensitive by optics and detection device meeting various needs of modern biological applications including live cell imaging with FRAP, FRET, FLIP, photo-activation and photo-conversion experiments. The system should be onsite upgradable to advanced imaging techniques on site in future. They system should be ready to upgrade for Super Resolution Confocal system on site.

The system should be offered with the following configuration:

Inverted Microscope

1. Motorized inverted microscope for Bright field, Fluorescence and DIC, with tilt-able eyepiece or ergonomic tilting Binocular tube for better ergonomy.
2. Motorized Z-focus drive with minimum z-step size of 50 nm or better with dedicated TFT/LCD touch-screen for the control of motorized functions of microscope.
3. 6 position motorized FL filter wheel & 6 position motorized nosepiece
4. Motorized scanning stage for XY-positioning.
5. LED illumination for transmitted light and high power. Metal Halide lamp illumination for Fluorescence with lamp of life minimum 2000 Hrs.
6. High resolution Confocal Grade Apochromatic objectives 10x/0.4, 20X/0.7, 40x/1.3 or 0.95 oil, 60/63x/1.40 oil. DIC prisms for all objectives should be quoted.
7. Pixel shift free fluorescent filters for UV, Blue and Green excitation should be quoted.
8. DIC accessories with motorized option should be quoted. All of the DIC component should be controlled through software with motorized option to avoid manual jerking during live cell experiment
9. **Motorized XY stage.**
High Resolution Motorized X-Y scanning specimen stage with universal sample holder. Ability to do multipoint, Multi Well imaging with spatial memory to scan the previously chosen point. It should be manufactured by the same manufacturer of the microscope for better adaptability

Confocal System Component

10. Scan head should have at least 5 independent filter-free inbuilt spectral detectors with independent voltage and offset control. Out of the 5 detectors, **at least two should be high sensitive built in GaAsP detector or equivalent with more than 40% QE.** All the detectors should be built in Spectral type. The spectral dispersion of the emission light should be based on either reflection grating with 32 array detector or Transmission grating or with prism based dispersion with high efficient spectral detectors.
11. Photo bleaching/ photo activation capability should be included within the quoted system.
12. All the FL detectors of the scan head should be filter free with freely selectable emission band width detection capability to suit to the emission spectra of the dyes.
13. The system should be capable of recording emission spectra with minimum spectral resolution of 5nm or better.
14. Computer controlled continuously variable confocal pinhole with software control.
15. Maximum scan resolution should be at least 6Kx6K for all channels and higher will be preferred in spectral mode.
16. The scan field diagonal should be at least 20 mm F.O.V. Higher FOV is preferred
17. Scan Zoom range 1:40x or more and should be adjustable in steps of 0.1
18. System should be capable of acquiring minimum 6-10 frames per second @ 512x512 pixel resolution in spectral mode (without line skipping and interpolation) and should increase

with ROI and zoom selection. Digitization capability of 8/12/16 bit should be available with the system.

19. An additional transmitted light detector should be offered for bright field and DIC imaging.
 20. Laser Lines required:
Solid state or Gas Lasers 440/445/458, 488 and 514 nm, 561nm & HeNe 633nm/ 640nm. All the lasers should have minimum power of 10mW
 21. UV 405 Laser with ROI capability
 22. System should have UV/VIS/IR ports for future upgradation.
The system should be Multi photon ready to upgrade on site.
 23. The entire lasers should be switched on/off through single switching power button and should be provided in a closed box with laser combining facility. All the visible lasers should include AOTF control also.
 24. **Super resolution Imaging:** The system should be able to use in SR mode for better resolution and Confocal Mode for normal imaging. Lateral resolution of 140-160 nm or better and Axial resolution of at least 350-400 nm or better should be expected out of the system. It is preferable if the system capable to take super resolution images while live imaging and multiple channels with minimum 3 live channels.
 25. Low Angle Dichroics/ Dichroics for excitation/ emission separation.
 26. Software should be capable of controlling Motorized functions of microscope, scan head control, laser control including AOTF and Image acquisition & processing. Software module or facility to image extended dynamic range while acquiring like HDR/BrightR/or equivalent with GaAsP/ HyD/APD or equivalent detectors. Saving of all system parameters with the image for repeatable/ reproducible imaging.
Advanced & Dedicated confocal 3D visualization software module to immediately open the multidimensional images like multichannel Z stack with time series. It should be able to play the time series volume as 3D time series movie. It should allow to record the 3D animation with various adjustment like pseudo coloring, intensity, rotation, clipping, 3D enhancement etc., Various 3D projection modes: Transparent, Maximum Intensity, and Depth coding, Stereo images (cyan / magenta, horizontal and vertical shutter, quad- based)3D image reconstruction from a Z-stack image series basic software,
 27. Incubation cage (Complete) for temp, humidity and CO2 controls with software regulated for live cell imaging
 28. 2D Analysis & Colocalization software
 29. One offline software license should also be included for analysis.
 30. Factory tested advanced PC with 30" monitor, Anti Vibration Table from the factory or imported active anti vibration table with air compressor should be quoted.
 31. Computer table for the system should be supplied along with confocal system from the factory.
 32. One Offline Workstation & one 5 KVA UPS should also be quoted with the systems
 33. Warranty 5 years
 34. Service/manpower: Should provide onsite with manpower for 5 years.
Optional item (Are not mandatory)
1. Additional high speed scanner for high speed live cell imaging with the capability of 20 FPS or better at 512X512 resolution should be offered in optional.
 2. The bidder may quote their additional functionality to control stage parameters
 3. If any additional tunable excitation laser for the excitation between 480 to 650 nm available with the vendor may quote in optional.