

Amended specifications (corrected)

Laser Scanning Confocal Microscope

The system should be of the latest state of the art technology with high sensitive spectral confocal imaging of live cells and fixed samples. It should include multichannel fluorescence imaging together with Z stack, time lapse including co-localization, FRET, FRAP, photo-activation and conversion imaging and /or analysis. On site upgradability to FCS/FCCS in cells as well as solutions for biophysics kinetic/diffusion studies.

Specifications of the system

1. Fully motorized Inverted Fluorescence Research Microscope for BF/DIC/FL with dedicated TFT/LCD display. Motorized XY stage with universal sample holders for slides, Petri dishes and other live cell sample holders for tile, mosaic and multipoint imaging. Motorized six-position DIC nose piece; motorized BF/PH/DIC condenser, six-position motorized FL turret. High precision built-in Z-focus drive with step resolution of 25 nm or better. Transmitted and reflected light illumination with 100 W halogen and 120 W metal halide with PC control and life span of at least 2000 hours. High resolution confocal grade Plan Apo objectives: 10x/0.4; 20x/0.80; 40x/1.3 oil; 60/63x/1.4 oil together with DIC accessories. Bandpass fluorescent filters for DAPI, GFP, CY3, TRITC and Rhodanine. Fully automated, programmable and software controlled on stage incubation system with temperature, humidity and CO₂ control.
2. Point scanning laser confocal detection unit with built in high sensitive GaAsP/HyD or equivalent spectral detectors with quantum efficiency more than 45% including high transmission optics. Confocal detection should include simultaneous detection and separation of at least five fluorophores based on above high sensitive detectors. Scan resolution of 4K x 4K or above with 6-8 fps or higher at 512 x 512 pixels. The scanner should be capable of dynamic live cell time lapse imaging with temporal resolution of 5 milliseconds and minimum frame size of 512 x 16 pixels. PMT based transmitted light detector for DIC imaging. Scan field diagonal should be 18 mm or better. Scan zoom range of 1x to 40x.
3. Laser unit with control electronics including multiline Ar458/488/514nm, DPSS 561nm, HeNe 594nm, HeNe 633nm or equivalent Diode SS and DBL 405/408 nm. All laser lines to be controlled through 8 channel AOTF for fast laser switching and attenuation.
4. Latest 64 bit control computer with intel Xeon 6 Core Processor, DDR Ram 8 GB HDD. I-2 TB SATA, DVD, Super Multi SATA R/RW, graphics. AT Fire GL V5200 256MB DH DVI, Gigabite Ethernet, Win 7 Ultimate 64 bit OS, USB 2.0, Fire wire. 30 cm LCD TFT monitor.
5. Monochrome cooled CCD camera, 2/3' chip with 1.4 million net effective pixel resolution; Binning 4x4 or better. Fire wire controlled by the same confocal software for multichannel, Z stack, time lapse wide field imaging.

6. Confocal system control software capable of controlling all motorized functions of microscope, scan head, lasers, AOTF including image acquisition and processing. Image acquisition for 3D, 4D, on line spectral imaging based on lambda stacks. Time series, FRAP, FRET, photo activation and conversion. Imaging without bleed through and auto fluorescence separation by on line emission fingerprinting technique. Advanced 3D for volume rendering and reconstruction, co-localization with histogram analysis.

7. Imported breadboard anti-vibration table with air damping for complete microscope system.

8. Bidders should clearly specify the after sales service/application support capabilities and training of personnel. Also provide all information with regard to pre-installation requirements for the system. Online UPS for the complete system including lasers should be included in the supply. Also provide detailed list of users of the system with contact details and user testimonials.

Optionally quote for

- 1) Peizo/Galvo insert for XY scanning stage should be offered for fast travel in Z stack imaging with a scanning range of 100 microns and minimum Z increment of 5 nm or better
- 2) System for single molecule detection should be based on minimum two channel GaAsP or APD's for FCS/FCCS with high sensitivity and minimum after pulsing. The FCS unit should perform auto and cross correlation measurements in live cells and solution for a wide range of dyes and proteins. The unit should have the facility for elimination/suppression of other excitation laser lines. All laser lines for confocal imaging should be capable of working in FCS/FCCS mode. Dedicated Plan Apo 40x/1.2 water immersion should be offered with the system. FCS/FCCS measurement software for auto and cross correlation capabilities should be quoted.

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