

Specifications for High End Inverted Motorized Microscope with Wide field of View having FRAP technology with Live Imaging Facility

System should be state of the Art facility which should be capable to perform wider applications which must include Bioimaging applications like Live Cell imaging, 6D Multidimensional imaging, FRAP, High Speed photoactivation, Photoconversion imaging etc.

1. Inverted Microscope

- a. Bright field, Fluorescence, phase contrast and DIC illumination with accessories for confocal scan head attachment
- b. Motorized beam path selection for visual and confocal imaging . microscope should be capable of image capturing of 23mm FOV or better
- c. Motorized Z focus drive with minimum stable resolution of 10nm or better
- d. Microscope should have the capability to project the back aperture plane of the objective to eye port / computer screen through camera for easy laser alignment and future up-gradation.
- e. 6 position or higher motorized FL filter wheel, 6 positions motorized DIC nosepiece .
- f. Motorized encoder based XY scanning stage for the movement of specimen using ergo joystick as well as total control by the confocal software
- g. LED illumination for transmitted light .
- h. High resolution High N.A objectives Apochromat -4x (N.A 0.2 or better) , 10x(0.45 or better N.A), 20x(0.80 N.A), 40x W(0.95 N.A) , 60X objective oil immersion (N.A. 1.42) , 100x oil immersion (N.A. 1.45)
- i. Eight Independent LED 400/435/470/500/550/580/635/740 Fluorescence Illumination 20,000 hours of life for fluorescence observation with High speed 7us or better TTL Triggering for fast dynamic experiments , Suitable filter for DAPI/FITC/Texas RED/CY5 & Quad Band filter DAPI/FITC/Texas Red/CY5 must be offered.
- l. DIC attachment motorized for 10x to 100x objectives with analyzer and polarizer attachment, sliders and modules for the respective objectives .
- j. Microscope system should be equipped with hardware-based Focus Drift compensation technology having LED (840nm or higher) based mechanism for Continuous Focus correction monitoring system. Focus correction technology should be usable for Glass as well as Plastic dishes.
- k. System should be quoted with On-stage Incubation system with facility to control Humidity / Temperature / CO2 etc with Objective heater suitable for Slides ,35mm/65mm/24well& 96well plates.

I.

- i. Microscope must be having Dual Deck capability to accommodate the various accessories for FRAP and in future for Spinning Disk confocal .
- ii. Microscope should have coded/motorized magnification changer 1.5X that should be compatible and active with dual deck both in eye observation and camera imaging.

J. High-performance with active air damping vibration free base for microscope system.

2. LASER COMBINER

a. High Power Dual fiber out Laser Combiner with 405nm(120mw or better) / 488nm(200mw or better)/ 561nm (150mw or better) & 638nm (200mw or better). Microscope and Laser Combiner must be future ready for Spinning Disk confocal on same microscope platform .

3. FRAP UNIT :

a. XY-Galvo Scanning unit for microscope, Suitable FRAP unit with capability of different ROI and shapes . System should be capable to perform Simultaneous FRAP and Imaging .

- FRAP unit should be workable in the range of 400-700nm.
- Max Dwell time 20micro second or better.
- Resolution 12 micro radius or better.
- Repeatability 2 micro radius or better.

4. sCMOS Camera :

a. High End sCMOS camera with 95% Q.E with 88fps or better at full resolution . Resolution of 2304 X 2304 Pixels. Pixel Size 6.45um x 6.45um , Read Noise 0.7electrons rms.

5. Computer Workstation (Factory Recommended)

OS: Windows 10 pro , 64 Bit English version .

CPU: Intel Xeon W-2225(CPU 4.0 core 4) or better

RAM: 64 GB

HDD: 1st HP Z turbo G2 512x GB, PCIe H.2 SSD.

2nd SATA 2TB

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 RTX4000 or better

Monitor : 27" x 2 monitors OR 32" Single Monitor .

6. Software:

- a. Basic image acquisition, Complete microscope control, Camera control Laser control & FRAP completely controlled including Spinning Disk Confocal control by single software.
- b. Saving of all instrument parameters along with the image for repeatable/reproducible imaging
- c. Frame/line/lambda capturing, Z-Stack, XY position marking, Time series imaging capabilities
- d. ROI bleach for FRAP experiments
- e. Co-localization analysis and volume rendering
- f. 2D and 3D image deconvolution . Artificial Intelligence features like Denoise and Haze removal capability .
- g. Diverse measurement and statistical processing
- h. Software should be capable to record Live graphs of different Live cell imaging experiments parameters as an recorded data.

- i. Realtime stitching of large samples with higher magnification, Multipoint and multi Well assay editors imaging with hardware-based autofocus. Online ratio imaging/physiology with online display of ratio image, real-time intensity plot over time and over depth. Online/real-time deconvolution.

NOTE: a) Vendor must specify the installation room conditions.

- b. All the cabling and controls required to integrate all the parts and operate from the controlling computer to be quoted

- c. Any optional/add-on module mentioned in the software brochure should be quoted with respective part code for better clarity and to avoid confusion and fair evaluation.

7. Terms and conditions:

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
2. The quotations should be on FOR-IISc Bangalore basis in INR only.
3. Lead time should be clearly mentioned in the technical and commercial bids.
4. The offer shall be valid at least 90 Days from the date of opening of the commercial bid.

5. The tender documents can be sent to the following address by post or in-person, and the document should reach us on/before 15 February 2023.

The Chairman Department of Microbiology and Cell Biology,
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Attention: Shovamayee Maharana