INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

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PR No. 1000051790 **Rfx No. 6100002600**

Technical Specifications of Motorized Inverted Fluorescence Microscope

S. No.	Motorized Inverted Fluorescence Microscope with 14bit 20MP monochrome camera & Software	Technical Compliance (Yes / No)	Additional Information (if any)
1.	MICORSCOPE STAND: Fully motorized inverted Microscope stand with fully apochromatically corrected fluorescence beam path, integrated Light Intensity Manager and Contrast Manger for bright field applications and dedicated in-built TFT/LCD display for convenient operation and control of the microscope should have one or more camera ports and in future it should be upgradeable to confocal microscope. The in-built Motorized Z-focus drive with minimum step resolution of 5 - 10nm or better. The z-focus drive & control buttons must be in-built in the body of the microscope & not kept separately to reduce footprint.		
2.	Trinocular Tube : 45 degree inclined with 23mm or better FOV with 3 position splitting ratio of 100% vis : 0% LR / 0% vis : 100% L / 0% vis : 100% R		
3.	Fully motorized stage with travel range 130 x 85 mm with mounting frames for slides, different sizes of petri dishes, and chambers		
4.	Eye Piece: Paired wide-field focusable 10X eyepieces with FOV 23mm or better and adjustable diopter setting of minimum +/-5mm.		
5.	Transmitted Illumination: High intensity 100 W HAL or equivalent light source with motorized transmitted light axis with fast motorized shutter for Multidimensional Imaging. Additional spare lamp must be provided.		
6.	Light Attenuators: Motorized reflector fluorescence filters turret of 6 positions or better for Contrast regulation.		
7.	Motorized Condenser: Motorized Universal Achromatic-Aplanatic condenser with a N.A. of 0.55 or better (with integrated polarizer) for Ph, DIC, BF, DF; preferably with 6 position turret disks, Motorized condenser should work for all objectives.		
8.	Objective Nosepiece: Minimum 6 position motorized objective DIC nosepieces or better, preferably with faster movement.		
9.	Objectives: High N.A. highlight transmission efficient Plan Apochromatic or Semi plan Apochromat objectives for BF, Fluorescence and DIC Application: • Semi Plan Apochromat 5x/0.16 Ph1 WD 18.5 mm • Semi Plan Apochromat 10x/0.3 Ph1 WD 5.2 mm • Semi Plan Apochromat 20x/0.5 WD 2.0 mm • Semi Plan Apochromat 40x/1.3 Oil WD 0.21 mm • Plan Apochromat 60x or 63x/1.4 Oil WD 0.19 mm • Plan Apochromat 100x/1.4 Oil WD 0.17 mm		

	DIC sliders must be provided for 40x, 60x/63x & 100x objectives.		
10.	Fluorescence Attachments: Motorized Fluorescence illumination and operation. Beam Path should be Completely Apochromatically corrected and high-resolution multichannel fluorescence imaging. Automatic Component recognition should be available in system.		
11.	Reflected light Illumination: 120W Metal Hallide with built-in power supply, lamp module and infrared filter for fluorescence light source with motorized brightness switch and integrated motorized shutter, that works stepper motor controlled, fast and vibration free. Antiglare screen must be provided.		
12.	Fluorescence Filters: High quality shift free fluorescence filters for imaging DAPI, GFP, Cy3, mCherry and Cy5 should be quoted.		
13.	Camera: Research grade High QE fluorescence imaging monochrome CMOS camera with a. Number of pixels: 4512 x 4512 = 20 megapixels or better b. Minimum Pixel size: 2.7µm x 2.7 µm or better c. Chip Size: 12 mm x 12 mm, equivalent to 1.1" (17.5 mm diagonal) or higher d. Spectral Range: With protection glass, 350 nm to 1000 nm e. Peak QE:86% @ 460 nm or higher f. Frame rate: 30 fps in live mode & 28 fps at 20 MP at 20MP g. Bit depth: 14 bit h. Exposure time: 0.1 ms – 60s i. Global Shutter j. Minimum USB 3.0		
14.	Software: Automatic and interactive Microscope control as well as optical grid by single software. (Full package) Image Acquisition: a. Should be able to (but not limited to) image capture, movie acquisition, fast acquisition. b. Automatic Multichannel image acquisition, ROI imaging, Z stack acquisition, time lapse. c. Optical sectioning and deconvolution with optical sectioning. Retaining of acquisition parameters for re-use should be possible. Image Processing: Basic adjustment of brightness, contrast, and gamma; adjustment of colour in BF Images; correction of bleaching effect in Z stack images; pixel shift correction; Image smoothening, Image sharpening. Image Analysis, Documentation and Deconvolution: a. Interactive and basic measurement such as length, Angle, diameter area, Perimeter. b. Gray value measurement along a line/Intensity measurement, Statistical analysis and evaluation of Data. c. Creation of user defined reports Deconvolution algorithm for image post processing should be possible. Z-stack: Module for acquiring Z-stacks with the help of a motorized focus drive. Software must be able to create full focus images out of Z stacks. Time Laps: Module for time lapse imaging to allow setting of time interval for different live cell experiments.		
15.	Computer : A suitable High end Computer system should be provided along with the system of following configuration: a. Intel i7 Processor with Minimum 64GB DDR4 SD RAM, 2TB SSD HDD b. 8GB Nvidia Graphics Card c. Windows 11 professional		

	d. MS office e. 27”LCD Monitor.		
16.	The microscope, camera & Software should be from the same manufacturer.		
17.	Warranty: The system must be covered for 5 years warranty from the date of Installation.		
18.	The system should be upgradable to confocal microscope & motorized and automatic hardware-based illumination device with optical sectioning module from the same manufacturer.		
19.	The past performance of the system will be taken independently by user & decision will be dependent of past performance & service of the company. Bidders have to provide information as per Format 2 attached in NIT document.		