

Tender Notification for the procurement of a “Upright Confocal system with Multiphoton and Live Cell Imaging, with capacity for Fast/Super Resolution Imaging” at Indian Institute of Science, Bangalore

Ref: MCB/Confocal/FIST/2017

Dear Sir/ Madam,

Kindly send your best price quotation for the following items with specifications as mentioned on CIP Bangalore basis to the undersigned. Your quotation should clearly indicate the terms and conditions of the quotations, delivery, delivery schedule, entry tax, payment terms, warranty coverage etc. The tender should be submitted in two separate sealed envelopes – one containing the “Technical bid” and other containing the “Commercial bid”, both of which should be duly signed and must reach the undersigned, duly signed on or before **10th January 2018** to the below address.

Address for correspondence:

The Chair,
Department of Microbiology and Cell Biology,
Biological Sciences Building,
Indian Institute of Science,
CV Raman Avenue, Bangalore KA 560012

Please enclose a compliance certificate along with technical bid.

Detailed specifications:

A. Fully Motorized Upright Fluorescence Research Microscope:

- a) Fully Motorized Upright Fluorescence Microscope for BF/DIC/Fluorescence preferably with touch pad for controlling motorized components of the microscope.
- b) Tilttable binocular eyepiece
- c) Programmable motorized X-Y scanning stage including sample holders for slides, 35/60 mm Petri dish, labtek chambers with multipoint, tile and mosaic imaging software.
- d) IR Based Focus Drift compensation for long term live cell imaging application is mandatory.
- e) 100W halogen illumination for transmitted light and 120W metal halide illumination for Fluorescence or specific LED illuminator catering to the following fluorophores to be included.
- f) Band pass fluorescent filters for DAPI, Cy3, GFP, CFP, YFP, RFP/mCherry and Cy5 in case of metal halide or specific wavelength LEDs for LED unit.
- g) Motorized 6 position DIC nosepiece, Motorized Condenser with modules for DIC, minimum 6 position fluorescence turret for accommodating fluorescent filters for sample visualization and camera based imaging.

- h) High precision Z-focus drive with step size of 25 nm or better.
- i) The following confocal grade plan apochromat or equivalent objectives should be included. (1) 10x/0.45 air or equivalent; (2) 20x/0.8 air or equivalent; (3) 20x/1.0 water dipping or equivalent; (4) 40x/1.3 oil immersion or equivalent; (5) 40x/1.0 water dipping or equivalent; (6) 60x or 63x/1.40 oil immersion or equivalent; and (7) 60 or 63x/1.0 water dipping or equivalent objective for confocal microscope.
- j) Automated shift free DIC accessories for all objectives.
- k) Setup for long term live cell imaging including Incubation system with Temperature, CO₂, humidity control. The parameters for Incubation system should be controlled by a software.
- l) The high sensitive detectors should be capable of working in Imaging as well as Photon counting mode for FCS/FCCS work in cells and solutions and the same should be offered as standard. All the lasers for imaging should be able to work in FCS/FCCS mode
- m) An active anti-vibration table with compressed air damping, bread board table top with M-6 threading for the complete microscope system.

B. Confocal imaging unit with high sensitivity detectors.

- a) Laser point scanning confocal system with high sensitive spectral detectors. Detection unit should be capable of working in Intensity and Spectral mode imaging.
- b) Detectors should be capable of simultaneous detection of minimum 4 fluorophores or more based on high sensitive GaAsP/HyD or equivalent detectors with QE 45% or more.
- c) The scanner should have real"ROI" scan capability for fast scan. Maximum scan resolution should be at least 8Kx8K or better per channel and should reduce to 16X16 pixel resolution.
- d) Scan speed should be 8-12 fps or better @ 512x512.
- e) Transmitted PMT for laser based DIC imaging.
- f) 2 channel GaAsP Detector or equivalent for reflection NDD imaging with suitable filters for Violet, green, red fluorophores imaging for Deep Tissue Imaging using MP Laser should be quoted.

C. Laser modules with AOTF and AOM control:

- a) Multi-line Argon or equivalent laser with 458/488/514nm
- b) DPSS or equivalent laser with 561 nm.
- c) HeNe or equivalent laser with 594 nm.
- d) HeNe or equivalent laser with 633 nm.
- e) DPSS or equivalent laser with 405 nm (offered as optional)

All visible & UV lasers should be connected to the scan head and should be controlled through AOTF for fast laser switching and attenuation in pixel precise synchronization with the laser scanner. Real ROI scan for FRAP, PA/conversion experiments.

D) Multiphoton:

Integrated and software controllable Femtosecond multiphoton laser with chiller, risers, humidity filter and nitrogen generator or equivalent multiphoton laser. The specifications include: tuning range: 690-1040 nm; pulse width: <70 fs and average power > 2W or better.

E) Capacity for fast/super Resolution Imaging:

- a) Fully automated and motorized Super resolution attachment with suitable high sensitive Detectors and Emission filters for the entire Vis Spectrum.
- b) The system should be able to work in SR mode, Virtual Pinhole mode for better sensitivity and Confocal Mode for normal imaging.
- c) Lateral resolution of 120 – 150 nm and Axial resolution of at least 350 nm or better.
- d) Detection based on GaAsP or high sensitive detectors.
- e) Simultaneous imaging of at least 2 fluorophores in the SR system. Emission filters options for the entire Vis spectrum should be available. All laser lines for Confocal Imaging should be useable for imaging in SR mode.

F) System control and Imaging Software:

- a) Software should be capable of controlling every component of the system including microscope, incubation system, confocal setup, fast/super resolution imaging module. Should be compatible for 3D, 4D, 5D and 6D imaging (X,Y,Z, t, λ and multi point).
- b) Real ROI for FRAP, Photo-activation/conversion experiments.
- c) FRET imaging as well as Quantitative data analysis capability.
- d) Advanced 3D image reconstruction with rendering from a Z-stack image series including deconvolution capability.
- e) Standard geometry measurements including intensity.
- f) Co-localization and histogram analysis with individual parameters.
- g) Spectral un-mixing with fingerprinting for separation of overlapping excitation/emission spectra of fluorophores.
- h) Image acquisition and processing tools for SR, VP images with various modes of visualization tools.
- i) Dedicated FCS/FCCS Module for curve fitting, diffusion, Count Rates, CPM and Structural Parameters.
- j) Additional complete analysis license package to be included.

G) Advanced image analysis software:

A separate suitable computer system with offline advanced, state-of-the-art image analysis software such as IMARIS to be provided. The image analysis software should contain following modules: Basic and advanced functions, quantitative measurement analysis for large and complex objects, lineage tracking of motion/cell division, cell tracking/morphology/segmentation analysis and batch processing capability. Software should cover the complete licence agreement for 3 years.

H) Computer and Monitor:

- (1) State of the art 64 bit control computer with minimum Intel Xeon 6 Core Processor, DDR RAM 32- 48 GB HDD or more; 2 TB SATA and upgradable to 8 TB or better, DVD, SuperMulti SATA +R/RW, Graphics : dedicated dual display with minimum 2 GB internal RAM, Gigabit Ethernet, Win 7 Ultimate 64 bit or better, USB 2.0/ 3.0, Fire wire. Large 32" LED monitor or better.
- (2) Suitable secondary analysis computer for offline license package to be included.
- (3) Suitable high-end computing capable system for offline advanced image analysis

I) Accessories, installation and Service Support:

- a) 3 year warranty including lasers and 3 year extended AMC.
- b) Suitable vibration isolation table with silent automated compressor pump
- c) Appropriate Online UPS system for the entire system (both for system and Multiphoton laser) with minimum 30 min to 1 hour backup,
- d) 100% CO2 Cylinders (2 nos) with regulators and automatic cylinder switching module
- e) Additional spare purge filters and nitrogen generator or equivalent spare parts should be part of the multiphoton laser

The above mentioned technical specifications are highly desirable. However, lower technical specifications may be considered if the above mentioned specifications are found to be unsuitable in financial terms. The Institute reserves the right to go for lower specifications taking into considerations its financial constraints and technical preferences.

Terms and Conditions:

- The Vendor should have a good track record of having previously supplied similar equipment in India (please furnish details)
- The vendor should have qualified technical service personnel for the equipment based in Bangalore
- The payment will be through a Letter of Credit.
- The lead time for the delivery of the equipment should not be more than 3 months from the date of receipt of purchase order or 2 months from the date of receipt of Letter of Credit details (whichever is earlier)
- The validity period of the quotation should be 90 days