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IITK/ME/2013/SLD-01
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To
M/S _____

Sub: Purchase of Spectral Confocal Laser Scanning Microscope with provision of attaching and optical laser trap system

We are interested in purchase of Spectral Confocal Laser Scanning Microscope with provision of attaching optical laser trap system with the specifications mentioned in the next page. Please send sealed quotations for the same to:

Dr. Sovan Lal Das
Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur – 208016, India

Note:

1. The envelope must be inscribed with word “Quotations”.
2. All quotations must reach by **March 25, 2013**, at or before 1500hrs.
3. The quotation must be valid for 90 days.
4. The delivery period should not be more than 4 weeks.
5. Send complete details of the products.
6. Payment terms: 90% on installation, 10% after satisfactory report.
7. All prices are to be FOR IIT Kanpur.

With best regards,

Dr. Sovan Lal Das

(Contd.)

Specification for Spectral Confocal Laser Scanning Microscope with the provision for attaching Optical Laser Trap System

The confocal microscope system should be of latest and modular technology suitable for biological science applications. System should be of high sensitivity detection capability to meet various challenging imaging needs of Biological samples including Live Cell imaging applications for FRAP, FRET, FLIP, photo activation and photo conversion experiments.

The system should be offered with the following configuration:

1) Fully Motorized & computer controlled Multiple port Inverted Fluorescence Research Microscope with a suitable laser port for Trapping experiments:

Bright field, Fluorescence and DIC observations with Motorized Z-focus drive with step resolution of 10 nm or better with dedicated TFT/LCD screen capable of controlling motorized functions of microscope. Motorized Universal Condenser with NA 0.55 or better, 6 position motorized FL filter wheel, 6 position motorized DIC nose piece. Programmable & Motorized XY Scanning Stage with universal sample holder for slides as well as 35 mm Petri dish for multiple location imaging. 12V /100w halogen illumination for BF & and 120W metal Halide Illuminator with high lifetime of 1500 hours for fluorescence. High resolution Confocal Grade objectives 20x/0.80 or better, 60/63x/1.40 oil. Band Pass fluorescent filters for DAPI, FITC/GFP & TRITC/Rhodamine. A suitable dichoric mirror for simultaneous optical trap/imaging should be incorporated in the motorized fluorescent turret. A high resolution color CCD Digital camera with 1.4 million pixel chip resolution, 2/3" CCD chip, FireWire IEEE 1394 connectivity, controlled by confocal software for high resolution fluorescence imaging.

2) Spectral Confocal Laser Scan head with built-in detectors:

High sensitivity confocal laser point scanning and detection unit with built-in spectral detectors for high efficient fluorescence signal collection. Capable of conventional intensity & Spectral based Confocal Imaging for complete visible range. Should be capable of simultaneous imaging of 2 fluorophores and at least 4 in sequential mode. Spectral dispersion of the emission light should be of latest technology with highly efficient spectral separation. Online separation and display of over-lapping emission signals through emission finger printing technique. Motorised & computer controlled continuously variable confocal pinhole with software control. High speed XY galvo scanner with 200 deg or better scan rotation with total scan flexibilities of Line, free hand curved line, XY, XYZ, XYZT and XYZTλ combinations. The laser scanner should have dual scan capability of fast scan for bleaching/photo activation & normal scan for Imaging, to conduct experiments like FRAP, FRET, PA/conversion. Scan resolution at least 2K x 2K for all channels and selected freely down to 4x1 pixels. Scan Zoom range 0.5X to 30X or more and adjustable in steps of 0.1. Scan speed of minimum 5 fps @ 512x512 pixel resolution and should increase to almost 150 fps at 512 X 16. Data acquisition and digitization capability with 8, 12 and 16 bit should be available.

3) Laser Modules:

The system should be offered with the following laser lines to excite the respective fluorochromes. Preference would be given to solid state lasers due to its long life and maintenance free operation.

- 488 nm for Alexa 488, FITC, GFP, Fluo 4, Cy2 fluorochromes.
- 555/559 nm for TRITC, Rhodamine, Texas Red, Cy3, PE, PI fluorochromes.
- 405 nm for DAPI, Hoechst fluorochromes.

All the lasers should be connected to the scan head through fiber optic cable. All the laser lines should be computer controlled for fast laser switching and attenuation in synchronization with the scanner.

4) Control Computer

Latest control computer with Core 2 Duo E8400 processor, RAM 4 GB DDR2-667,HDD: 500GB SATA II, DVD SuperMulti SATA +R/RW, SATI Fire GL V5600 512MB,Gigabit Ethernet, **Win Vista Ultimate 32/64bit**, USB 2.0, Firewire. Large 30" LCD TFT monitor or dual TFT monitors with 21".

5) System control and imaging software.

Software should be capable of controlling Motorized functions of microscope, scan head control, laser control, scanner control and Image acquisition & processing. Saving of all system parameters with the image for repeatable/reproducible imaging. Capability of Line, curved line, frame, Z-stack, Time series imaging. Photo-activation/conversion, FRAP & FRET imaging capabilities. Ion imaging with online ratio metric imaging and analysis. Standard geometry Measurements like length, areas, angles etc. including intensity measurements. 3D image reconstruction from a Z-stack image series. Co-

localization and histogram analysis with individual parameters. Spectral un-mixing and emission fingerprinting technique should be standard feature of the software.

6) Installation and service support.

Bidders should clearly specify the after sales service and application support capabilities. Should provide all pre-installation requirements to have the system installed in ideal room conditions. Include the supply of appropriate Online UPS system to support the complete system including lasers. Provide a detailed list of users of the quoted system in India with contact details.

Dr. Sovan Lal Das