NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008 (ODISHA)
An Institute of National Importance under Ministry of HRD, GOI

NOTICE INVITING TENDER

Tender Notification No: NITR/PW/LS/2020/214 **Dated: 22/12/2020**

The National Institute of Technology, Rourkela invites bids from the eligible bidders for procurement and installation of **High-Resolution Laser scanning Microscope with Live- Cell Imaging Facility to department of Life Science, NIT Rourkela**.

Last date of Submission of Bid **: 18/01/2021 by 11:00 AM**

Date of opening of techno-commercial Bid **: 19/01/2021 at 11:00 AM**

For Details:
https://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx

Contact:

Prof. Rohan Dhiman
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Department of Life Science
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA, India
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Bidding through: https://eprocure.gov.in/eprocure/app

Sd/-
REGISTRAR

NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA-769008, ODISHA

(OPEN TENDER NOTICE NO.: NITR/PW/LS/2020/214 Dated: 22/12/2020)

Tender for Procurement and installation of procurement and installation of **High-Resolution Laser scanning Microscope with Live- Cell Imaging Facility** to department of Life Science, NIT Rourkela.

Item No	Description	Quantity
1	**High-Resolution Laser scanning Microscope with Live- Cell Imaging Facility**	**01 Unit**

1. Quantity required**: As mentioned above (All information regarding technical specification provided in Annexure-II**)
2. Delivery **:** Within **120 days or earlier** from the date of purchase order
3. **Last Date of submission of bid : 18/01/2021 by 11:00 AM**
4. **Date of opening of techno-commercial bid: 19/01/2021 at 11:00 AM**
5. The firm should not have been black listed at any time.
6. The submission of following bids by the tenderer should be through https://eprocure.gov.in/eprocure/app Please follow the guidelines as per the portal.

Procurement of High-Resolution Laser scanning Microscope with Live- Cell Imaging Facility

(Tender Notice No.: NITR/PW/LS/2020/214 Dated: 22/12/2020)

Due on 18/01/2021 by 11:00 AM

7. **Liquidated damage clause** will be charged for any delay in supply of goods.
8. The validity of the tender shall be **120 days** from the date of opening of the techno-commercial bids.
9. Detailed advertisement including all tender documents is also available in our website at http://nitrkl.ac.in/OldWebsite/Jobs_Tenders/9Equipment/Default.aspx
10. NIT reserves the right to qualify or deny prequalification of any or all applicants without assigning any reasons.

(REGISTRAR)
NIT, Rourkela
Fax No- 0661-2462022
Ph. No -0661-2462021

Annexure-II

Tender Specification for High-resolution Laser Scanning Microscope

The High-resolution Laser Scanning Microscope should be the state-of-art technology suitable for live and fixed biological samples. The system should be highly sensitive by optics and detection device meeting various needs of modern biological applications including live cell growth and time-lapse imaging of prokaryotic and eukaryotic cells, DIC imaging, FRAP, FRET, photo-activation/bleaching and photo-conversion experiments. The system should be upgradable to advanced imaging techniques on site in future. The vendor should supply the entire system with all necessary accessories and complete system integration of hardware components. The vendor should be responsible for the complete system installation, functioning, maintenance and training by trained engineers.

The system should be offered with the following configurations.

Part I: Inverted Microscope

1. Fully motorized inverted microscope for bright field, fluorescence and DIC, with tilt able eyepiece for better ergonomy.
2. Motorized Z-focus drive with minimum z-step size of 10 nm or better with dedicated TFT/LCD touchscreen for the control microscope. Hardware based Dedicated Drift compensator (IR Laser /LED based) for longtime Live Cell Imaging.
3. 6 position motorized FL filter wheel & 6 position motorized nosepiece with DIC attachment.
4. LED / Halogen illumination for transmitted light & 120W or better metal halide illumination or LED illumination with 2000 hr or higher lifetime for fluorescence should be offered. In case of LED Illumination in fluorescence mode, min 4 LED's should be part of the configuration (375nm, 477nm, 552nm and 640 nm or equivalent).
5. Universal Motorized Condenser 6-7 position long working distance condenser with dedicated slots for DIC objective specific prisms. The DIC prisms and polariser should automatically switch positions when respective objectives are selected and fluorescence incident light back-reflection blocking mechanism.
6. High resolution Confocal Grade Plan-Apo objectives 10x/0.4NA (or better), 20X/0.7 NA (or better), 40x/0.95NA (or better) and 60/63x oil with 1.4 NA (or better), 100X/ 1.4 NA (or better) oil. Firms who are having more than 100x with 1.45 NA objective should also supply. Shift free DIC accessories for all objectives should be quoted. Immersion liquid (50ml) should be supplied with the microscope.
7. Narrow Bandpass Pixel shift free fluorescent filters for DAPI, GFP, RFP, and Cy5 should be quoted.
8. All of the DIC components including DIC prism of all the objectives should move independently and automatically and controlled by software only to avoid manual jerking during live cell experiments.
9. Motorized XY stage: High resolution motorized linear encoded X-Y scanning stage, specimen stage should be with universal sample holders. Ability to do multipoint, multi well imaging with spatial memory to scan the previously chosen point. Suitable travel range is required for Dish, Slide & Well Plate.

Part II: Confocal System Component

1. The confocal detection unit with a provision of minimum 5 built-in Spectral HyD/GaAsP Spectral detectors and should be quoted with minimum 3 High Sensitivity HyD/GaAsP detectors. All detectors should be capable of working in Intensity and Spectral mode Imaging.
2. It should be capable of simultaneous detection and separation of at least 3 fluorophores or more based on highly sensitive GaAsP / HyD detectors with QE 50±5 %, higher will be preferred.
3. All the detectors should be built in (in the scan head) Spectral type. The spectral dispersion of the emission light should be based on either reflection/transmitted grating with or without 32 array detector or prism-based dispersion with highly efficient spectral detectors. All the FL detectors of the scan head should be filter free with freely selectable emission band width detection capability to suit to the emission spectra of the dyes.
4. The system should be capable of recording emission spectra with minimum spectral resolution of 5nm or lesser throughout the visible spectrum range. Computer controlled continuously variable confocal pinhole.
5. Maximum scan resolution should be at least 8K X 8K or higher for all channels and higher will be preferred in spectral mode.
6. The scan field diagonal should be at least 20 mm (or more) F.O.V.
7. Scan Zoom range 1:48x or more and should be adjustable insteps of 0.1 or better.
8. System should be capable of acquiring minimum 30 frames per second pixel resolution in spectral mode and should increase upto 130 fps 512 X 16/32 resolution with ROI and zoom selection. Digitization capability of 8/12/16 bit should be available with the system.
9. An additional transmitted light detector should be offered for bright field and DIC imaging.

Part III: Laser Lines required

1. Solid State lasers (10000 hrs. life span): 488nm, 514 nm, 561nm, and 633 nm/639 nm.
2. UV 405 Laser with ROI capability.
3. All the laser must be controlled through AOTF for better laser switching and intensity control.
4. All the lasers should have minimum power of 20mw or more and a guaranteed 10000hrs of working lifetime. Laser units should be connected to the scan head through fiber optic cable. Laser wavelength may vary upto ±5 nm.
5. The entire lasers should be switched on/off through single switching power button and should be provided in a closed box with laser combining facility. All the visible lasers should include AOTF control and Low Angle Dichroics for excitation/emission separation.
6. 445/440/448/458 nm and 594 nm (for mCherry dye)nm Lasers should be quoted in option.

Part IV: Software modules

It should include / capable of:

1. Controlling motorized functions of microscope, scan head control, laser control including AOTF and image acquisition & processing. Saving of all system parameters with the image for imaging.
2. Advanced & Dedicated confocal 3D visualization software module to immediately open the multidimensional images like multichannel Z stack with time series.
3. It should be able to measure the biovolume, biomass, thickness and other parameters of the cells.
4. It should able to visualize the cytoskeleton and cellular structures of both prokaryotic and eukaryotic cells and also will be able to measure the length of the cells as small as 2 micrometres or less with the in-built scale.
5. It should be able to play the time series volume as 3D time series movie. It should allow to record the 3D animation with various adjustment like pseudo colouring, intensity, rotation, clipping, 3D enhancement etc., Various 3D projection: Transparent, Maximum Intensity, and Depth coding, Stereo images (cyan / magenta, horizontal and vertical shutter, quad- based)3D image reconstruction from a Z-stack and time lapse (xyzt) image series basic software 2D deconvolution & co-localization analysis.
6. It should be able to deliver color coded / color scaled images based on the intensity of the signal / level of colocalization. Kymograph, dynamic region if Interest, online intensity measurement for ratio and FRET, FRAP acquisition and analysis, Online Spectral Imaging & unmixing.

Part V: Computer & Monitor

1. The branded HP/Dell computer must be factory recommended and tested. High Performance Xeon Processor based Workstation 64 GB RAM, 8TB HDD and 500GB or more SSD.
2. High Performance Professional Graphics Card with Windows 10 Professional (64 bit). One or more 30-32 inch High Resolution Monitor, Key board, Mouse.

Part VI: Super-resolution and live cell imaging system

1. Super-resolution Imaging capability: The system must have equipped with a fully automated online super-resolution module to achieve a resolution of up to 120-140 nm or better in XY and 300-350 nm in Z. Detection should be based on high sensitive detectors with QE/PDE must be 50±5% or higher for super resolution imaging.
2. The super resolution system should be able to capture at least 3 fluorophores simultaneously specially to perform live cell imaging in super resolution mode.
3. **On stage Incubation system:** With programmable and remotely operated control of Temperature, Humidity and active CO2 and O2. The incubation setup should be for CO2 and O2 controller and fitted with the lens heater for oil objective for live Prokaryotes and Eukaryotes growth (minimum upto 72 hours in multi-well plates and petri-dishes of 35mmx1pc, 35mmx2pcs and 50/60mm) and imaging; and should be controlled with software and touch panel controller. Dish attachment is required for chambered cover glass, chamber slide and slide glass with internal humidifier. Sensor lids are required for 35mm, 50mm, chamber slide and chambered cover glass. Another 3 (three) sets of Chamber units and Dish Attachments must be supplied. Quote the O2 Level controller to perform hypoxia related live cell imaging.

4. **High Sensitive Scientific CCD Camera:** A Peltier cooling CCD camera suited for both- low light fluorescence application and brightfield imaging should be quoted. The camera should have minimum 1900 x 1200 pixel, 4.5 µm x 4.5 µm or bigger pixel size. Various binning modes in both color and monochrome and overlapping mode for high-speed imaging should be available with 12 bit and 8-bit digitization mode. Typical frame rate should be 45 fps or more @ full resolution.
5. **Active Anti-Vibration Table:** Active anti-vibration table with bread board should be supplied along with the system for the better compatibility. Air compressor must be the part of the Anti-vibration table. A Computer Table of reputed brand should also be supplied along with the system.

Part VII: Accessories

1. Ergonomic chairs - 4(four) nos. of reputed brand should be supplied. The chairs should have a high back with proper lumbar support to provide correct lower spine positioning when seated, even when leaning forward looking into a microscope. The seat height and arm rests should be comfortable and adjustable with added footrest. The chairs should roll and swivel freely.
2. Bidder should also install two 1.5 ton 5-star branded inverter ACs with relay for 6-h interval for continuous cooling in the designated room.
3. Dehumidifier should be provided for better functioning of the instrument.
4. Online UPS of 10 KVA for the complete system including lasers supply with 1 hr. or more backup.
5. Suitable CO2 and N2 Cylinders should be quoted with controllers.
6. Vendor should supply suitable dyes (Red, Green, Blue emitting dyes), plates (100 numbers live cell imaging) and chambered slides (50 numbers 8-well sterile glass).

Part VIII: Other requirements

1. Bidders should clearly specify after sales service/application support capabilities.
2. Provide all information about pre-installation requirements (i.e. room, environment) for system installation.
3. Warranty period: Minimum of 5 years from the date of installation (including all parts and consumables supplied by the vendor) and during this warranty period, authorized service engineer should visit at least twice in a year in addition to the break-down call.
4. Service/Manpower: Should provide onsite instrument operation support with manpower for at least 2 years.
5. The system should be delivered up to NIT Rourkela and the cost should be included in the offer.
6. The system should be upgradable to IR imaging in future.
7. The vendor should be able to provide all spare and parts for minimum of 10 years from the date of installation.

Part IX: Optional Items:

1. Resonant Scanner: A resonant scanner should be quoted in option with the following specification and the given price should be valid for 1 year from the date of offer:

   An actively cooled resonant scanner with minimum resolution of 2Kx2K or more and Up to 25 frames / second at 512 x 512 (full frame) should be possible and should go up to 300±10 frames / second at 512 x 16.

2. Additional 2 number of HyD detectors should be quoted in option and the quoted price should be valid for at least one year.