CSIR-INDIAN INSTITUTE OF CHEMICAL BIOLOGY
(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)
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"PURCHASE ORDER"

M/s Radical Scientific Equipments Pvt Ltd., 9th Mile Stone, Ambala-Jagadhri Road, Ambala Cantt- 133104 Haryana, India Email: info@radicalscientific.com info@radicalindia.com	**PO No.** IICB/PUR/24-25/599/547/367
	Date 12.03.2025
	Subject Procurement of Inverted Phase Contrast Microscope and Image Analysis Software
	Your Ref. RSEPL/10/2024/363/38/VK/IICB-KOLKATA, dated 26.10.24 & your email dated 17.12.24 & 22.02.25

Sub: Award of contract for Supply, Installation Testing and Commissioning of Inverted Phase Contrast Microscope and Image Analysis Software

Ref :
1. Your Quotation No.: RSEPL/10/2024/363/38/VK/IICB-KOLKATA, dated 26.10.24
2. Your Email dated 17.12.24 & 22.02.25

Dear Sir/Madam,

        I am directed to inform you that after evaluating the bid documents submitted by you as referred above, the Director, CSIR-Indian Institute of Chemical Biology is pleased to inform you that you have been selected as the successful bidder for the supply, installation and commissioning of Inverted Phase Contrast Microscope and Image Analysis Software**.** Accordingly, you are requested to arrange for Supply, Installation & commissioning of the offered item/items as detailed below:

Sl. No.	Estimate Description	QTY	UNIT PRICE [INR]	TOTAL PRICE [INR]
1.	**INVERTED PHASE CONTRAST MICROSCOPE AND IMAGE ANALYSIS SOFTWARE** **Make: RADICAL** **HSN Code: 9011** (i) **'Radical' Advanced Inverted Research Microscope, Model: RTC-7 (Code: NX) "CE Certified"** (ii) **'Radical' CMOS Hi-Speed Cameras, Model: ProCAM HST-6 with Image Analysis software ProCam for Image Capturing & Image Analysis, suitable for Fluorescence Imaging.** (iii) **Branded Compatible Desktop Computer System** **(As per Annexure A attached)**	01	635000.00	635000.00
	Detailed specifications of the items shall strictly conform to those specified in Purchaser's Tender Document No.: IICB/PUR/24-25/599/547/367 [published as a GTE on CPP portal of Government of India with tender ID 2024_CSIR_210351_1] and complied by Supplier in their quotation/offer RSEPL/10/2024/363/38/VK/IICB-KOLKATA, dated 26.10.24 & your email dated 17.12.24 & 22.02.25			
		Grand Total		Rs. 635000.00
		Add : GST @ 18%		Rs. 114300.00
		F.O.R. CSIR-IICB Kolkata Price		Rs. 749300.00
		Rupees Seven Lakh Forty Nine Thousand and Three Hundred only		

        The Purchase Order shall be governed by the terms and conditions as stipulated in CSIR-IICB Tender Document. The technical specifications and other allied features of the ordered goods and services shall strictly conform to those specified in the CSIR-IICB Tender Document.

Attention of the Supplier is also invited to the following conditions:

01	Price basis	F.O.R. CSIR-IICB Kolkata
02	Delivery period [for supply and installation of the ordered goods]	The entire obligations of supply, installation and commissioning of the ordered goods shall have to be completed within 08.09.25. Purchaser reserves the right to ask for a joint inspection of the delivered goods in the presence of supplier's representative.
03	Delivery site	CSIR-IICB Kolkata [TRUE Campus] CN-06, CN Block, Sector V, Bidhannagar, Kolkata, West Bengal 700091
04	Taxes & Duties	GST @18% shall be applicable on the order value.
05	Installation and Commissioning & Training	The ordered goods shall be installed and commissioned by Supplier's engineers within the delivery period stipulated in this Purchase Order. Once installation is completed, necessary training shall be imparted to Purchaser's Scientists/ Technical Officers etc. for effective operation and maintenance of the equipment.
06	Warranty	The ordered goods shall be covered under on-site comprehensive warranty for a period of 01 year to be effective from the date of successful installation and commissioning of the goods. Other aspects of the warranty clause are detailed at GCC Clause 2.21 read with the relevant SCC.
07	Payment terms	The payment shall be made in Indian Rupees as follows: • 100 percent (Hundred Percent) of the Contract Price shall be paid within 30 days of completion of delivery and acceptance of the materials to the complete satisfaction of the user division against submission of the documents specified in the Purchase Order and Performance Security **Note: All payments due under the Contract shall be paid after deduction of statutory levies at source (like GST-TDS, ESIC, Income Tax, etc) wherever applicable.**
08	Performance Bank Guarantee / Performance Security	Within 21 days of issue of this Purchase Order, Supplier shall furnish a Performance Security for 05 % of the order value / invoice value. Other aspects of the Performance Security clause are detailed at GCC Clause 2.13 read with the relevant SCC.
09	Liquidated damage	Subject to GCC Clause on Force Majeure, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services or contract value in case the delivered price of the delayed Goods or unperformed services cannot be ascertained from the contract, for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the Percentage specified in SCC. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause on Termination for Default. **The penalty shall be 0.5% per week or part of a week towards late delivery and towards delay in installation and commissioning. The maximum amount of penalty shall be 10%**

10	Custom Duty Exemption Certificate	For supplies made from within India, Custom Duty Exemption Certificate and DSIR certificate will not be issued.

The Purchase Order shall be governed by the terms and conditions laid down in our tender document vide Tender Document No. IICB/PUR/24-25/599/547/367 [published on CPP portal of Government of India with tender ID 2024_CSIR_210351_1]

You are requested to send us the Order Acknowledgement immediately and in any case within 07 days of issue of this Purchase Order, failing which, the Purchase Order shall be deemed to be cancelled.

This Purchase Order constitutes a binding contract between you as the Supplier and CSIR-Indian Institute of Chemical Biology as the Purchaser.

Sincerely,

Controller of Stores & Purchase
For and on behalf of the Council of Scientific & Industrial Research

Copy to:
i.   Dr. Subhas Chandra Biswas, Indenting Officer
ii.   Dr. U Mabalirajan, Project Leader

Annexure-A

Sr. No.	Description	Qty.
A.	**SUPPLY, INSTALLATION TESTING AND COMMISSIONING OF INVERTED PHASE CONTRAST MICROSCOPE AND IMAGE ANALYSIS SOFTWARE** **CONFIRM TO OUR:** **MAKE: RADICAL, HSN Code:9011** (i) 'Radical' Advanced Inverted Research Microscope, Model: RTC-7 (Code: NX) "CE Certified" (ii) 'Radical' CMOS Hi-Speed Cameras, Model: ProCAM HST-6 with Image Analysis software ProCam for Image Capturing & Image Analysis, suitable for Fluorescence Imaging. (iii) Branded Compatible Desktop Computer System	01 No.

Detail Specification

Sr. No.	Part Name	Part Code	Description
1.	Body	RT7NX4-MB	Metal body, rugged, compact unit, sturdy stand, scratch resistant, modular ergonomic design, high grade material to avoid vibration, touch point treated, scratch resistant, acid & UV resistant texture painted, spherical lens with field/Aperture, intensity controller & on/off switch, rubber feet, built in trinocular camera port with carrying handle.
2.	Optical System	RT7NX4iOS	Universal infinite corrected optical system, chromatic free, colour corrected, anti-fungal, anti-reflection coated, anti-bacterial coated, multi-layered hard coated, works best in intervisible spectrum, colour coded objectives, fly eye lens, parcentered, automatic constant sharpness, parfocality, suitable for bright filed, phase, immuno- fluorescence, DIC, Emboss, DIC/inversion contrast, IMC/IHC, IPC contrast, H&E, Hoffman contrast, pseudo 3D etc. infinity optical with tube lens 1x, Best in class of objectives best optical performance from UV to NRI, maximum S/N ratio and best optical performance from UV to near infrared.
3.	Koehler's Transmitted Illumination	RT7NX4L3WL6	LED 3W (white) life 65000 hrs., lumens equivalent 50W halogen, constant colour temp. 4500k, with microprism filter (fly eye lens) for uniform illumination in entire FOV, Light intensity controller, suitable for bright field, phase, fluorescence, IMC, Hoffman, DIC/inversion contrast, emboss etc. flexible/ retroverted ensuring large space, transmitted/ epi-fluorescent control knobs located on right side of body-easy to operate.
4.	Viewing Head	RT7NX4B45	Trinocular (Binocular Tube with port for camera attachment) inclined at 45° with diopter adjustment facility, siedentopf head having 30mm dia ocular, rotatable through 360°, IPD-from 48-75, upto 50mm adjustable viewing height, left side camera port with splitting ratio 100:0, 0:100 (with relay lens upto 0.7x), free space upto 110mm with FOV upto 25mm, ocular ID of 30mm.
5.	Eyepiece	RT7NX4EP1022	Paired, high eye-point WF 10X, FOV-22mm, dia 30mm, anti-fungus, multilayered coated, high quality, siedentopf (high & low position) good contrast, abrasion free, aplanatic, precentered, diopter adjustment on both eyepieces (±5mm) rubber eye guard.
6.	Nosepiece	RT7NX45N	Inward tilted, precise quintuple revolving on multiple ball bearing, click stop mechanism, inbuilt DIC/Plastic DIC slot and relief contrast/equivalent contrast i.e. BF/FLUORESCENCE/PH etc.
7.	Condenser	RT7NX4RCON-9	Extra long working distance condenser N.A. 0.3, W.D 75mm with removable condenser, without condenser WD 190, dismountable, non-centerable, slot for slider, (ND Filter) with phase slider upto 100x, free working distance upto 190mm, removable slider, suitable for BF, Phase, Fluorescence.
8.	Focusing	RXF10	Manual, co-axial, coarse & fine, coarse range-37.5mm, coarse-9mm per rotation, fine precision 1µm, fine 0.1mm per rotation, stroke 20mm, upto 18mm, down-2.0mm (via nosepiece), tension control, double knob.
9.	Objectives	**Infinity Corrected Plan Achromatic Phase objectives, suitable for Bright Field & Phase Contrast Application : -** RT7NX4P-PH10ic — LWD PH10X, N.A. 0.25, W.D. 7.0mm, phase, plan achromatic, infinite, for brightfield Ph1 RT7NX4P-PH20c — LWD PH20X, N.A. 0.40, W.D. 3.9mm, phase, plan achromatic, infinite, for brightfield Ph1 RT7NX4P-PH40i-CC1 — LWD PH40X, NA 0.55, W.D. 1.7-2.7mm, phase, plan achromatic, infinite, for brightfield, spring loaded, with cover glass correction Ph2	
10.	Phase slider	RT7NX4PHSL	3-position, integrated precentered phase slider for phase position for 10X/20X/40X, empty position for bright field. special supporting slider for phase contrast will be provided to completely remove HALO effect
11.	Mechanical Stage	RT7NX4MS	Fixed, Rectangular, right hand low drive control, scratch-resistant, anodized, fixed size 170(X)x250(Y)mm, attachable mechanical stage:70(X) x 180(Y)mm, 3 point stage with object guide, low position by co-axial knob, X-Y movement 126x78mm, accepts different types of micro-test plate, petri dish holder, glass slide holder & culture flask holder, clear acrylic/glass circular insert, terasaki holder, universal holder for holding different types of plates, multiwall plates, dishes, universal slide holder, 6/12/24/30/60/96mm, holder for two side stages, mico-manipulator etc.
12.	Power Supply	RPSLED	LED power supply, wide operating voltage range, 90V-240V, 50/60Hz
13.	Standard Accessories	RCC RVC RAK RF5A MANUAL WARRANTY RBF RPC	Cleaning cloth Vinyl/Dust Cover Allen keys Fuses - 2 no's Instruction manual Warranty card Blue/Green Filter (frosted & Plain) Power Cord (country Specific) Integrated C-mount 0.5X

Note:
- **The offered Microscope is suitable for Bright Field & Phase Contrast Application.**
- **The offered Microscope, Camera & Software are from same Make i.e. our Own Make 'Radical' for better compatibility.**

(ii)	**'Radical' Procam CMOS Hi-Speed Cameras, Model: ProCAM HST-6 with Image Analysis software ProCam for Image Capturing & Image Analysis.**		
	Part Name	**Description**	
	Pixels	6.3MP (Colour/mono)	
	Sensor & Size	1/1.8" (7.37mmX4.92mm) CMOS	
	Pixel Size	2.4µmX2.4µm	
	Resolution Frame Rate (Live & Capture)	3072x2048: 59FPS 1920x1080: 59FPS 1536x1024: 59FPS 640X480: 70FPS Any Area (ROI)	
	Exposure Time	0.02ms~30s	
	Sensitivity	425mv with 1/30s 0.15mv with 1/30s	
	Gain	Upto 25X	
	Dynamic Range	75dB	
	Full Well Capacity	14000e	
	SN Ratio	46dB	
	Binning	1x1,2x2,3x3,4x4	
	Capture/Control API	Native C/C++, C#/VB.NET, Directshow, Twain, Labview	
	Cooling	Natural/Peltier fan/passive cooling	
	IR Filter Range	380-650nm (IR Cut)	
	Spectral Range(nm)	380 nm ~ 720nm (with infrared filter)	
	Shutter	Electronic rolling shutter(Global shutter optional)	
	Image Data Format	12 bit RAW Format (12x3 =36 bit RGB)	
	AD Conversion	12 bit	
	Operating Mode	Continuous output	
	Scanning Mode	Progressive Scan	
	Exposure Control	Manual/Auto/Area	
	White Balance	Manual/One time/Auto/Area	
	Image Processing	GAMMA/Contrast/Black Level/Noise Reduction/3D Noise Reduction/Sharpness/Saturation	
	Quantum Efficiency	Upto 80%	
	Picture Format	JPEG/BMP/PNG/RAW	
	Colour rendering technique	Ultra fine colour engine	
	Software interface	Radical ProCAM Software	
	Operating System	Windows 7/8/10/11 (32 & 64 bit) OS X (Mac OS X), Linux	
	Data Interface	USB3.0/3.1 (B Type),	
	Lens Mount	0.55X C Mount, Compatible C-Mount with microscope & sizing adapter tube	
	Technology	On-sensor light guide technology for reducing scattering of light inside the senor	
	Dimensions/Weight	Metallic square body 58mm, height 36mm/(Exclude Lens Mount)/Approx. 180g	
	Rated Volt/Power	5V via USB	
	Temp./Humidity	Operation: -10~50°C /storage: -20°C ~ 60°C/ Working: 10%~90% RH (No Condensation) 10% ~ 60%	

Image Analysis Software ProCAM (with Licensed Software Key)
Technical Features:-
- Continuous automatic exposure control
- Automatic/manual white balance
- Multi-focus (Z-Stacking/3D imaging)
- Multi-fluorescence/channel mode mixing/unmixing
- Measurement capabilities
- Image/text annotations
- Morphological analysis
- Ultra sharp Grey scale mode
- Image processing and enhancement
- Optical configuration setting
- Layout configuration setting
- Image combine
- Image comparison
- Tile imaging(Horizontal or Vertical)
- Multiple image alignment
- Truecolor Imaging
- Gallery view
- Manual focus assist
- Batch conversion
- Live Preview & Image Capture/AVI Stream Capture
- Microscope Control
- Active denoising
- Active Sharpening
- HDR Image enhancement function
- Professional Segmentation & Count function
- Image Stitching
- Management visualization and Printing of metadata and image.
- Saving formats (image) JPEG, TIFF, PNG, BMP, RAW, GIF, ICS/IDS, DICOM etc.
- Saving formats (video) AVI, MP3, MP4,(H264), MP4(H265), WMV etc
- Time-lapse
- Macro manager
- Gain adjustment upto 22x
- High dynamic range viewing
- Shading calibrations/Adjustment
- Multi-camera operation
- Merge, crop and image arithmetic
- Multipoint experiments/Capture
- Individual user profiles
- Image Overlapping, grid/circle overlay
- Objective Calibration
- Line profile/histogram
- Magnifier (zoom) function
- Intensity Measurement & Profile
- Contour Based measurement data (area box parameter, Gray value)
- Image analysis, image filter
- Support multiple camera's at same time.
- Movie acquisition
- Manual Measurement : particle, grain counting, automatic recording, spatial calibration measurements, point to point length measurement, length, width, area, box, gray values, perimeter, micrometer/microbar, vector layer, layer management, cross hair, HRD/Observation mode, arbitrary line, three-point angles, digital racticle grid, basic linear measurement and annotation, report creation in word & excel format, enhancement brightness & contrast etc,.

Technical Specifications:-

Exposure & Gain	Auto exposure (exposure target preset), ROI and manual exposure (exposure time can be inputted manually); Up to 10 times gain; ISO 200/400/800 settings.
White Balance(Auto & Manual)	Advanced single-click intelligent white balance setting, temperature and tint can be manually adjusted & ROI
Color Adjustment	Hue, saturation, brightness, contrast, gamma initialization adjustment, invert, Blur, noise removal, Gamma RGB etc.
Frame Rate Control	Adjustment of frame rate available for different computer configurations;
Power Frequency Setting(Anti-filcker)	Natural light/DC, AC 50 HZ, AC60 HZ switch function thoroughly eliminates video flicker
Flip/View	Zoom in/Zoom out, rotation 90°, 180°, 27°, horizontal flip/vertical flip, Redo/Undo, Intensity histogram
Skip and bin sampling	Bin mode can obtain low noise video stream; skip mode obtains sharper & smoother video stream. Support video stream histogram extension, negative & positive switching, gray calibration, clarity factor for focusing etc.
Parameters	Load, save, overwrite, import, export self-defined parameters of camera control panel (including calibration Information, exposure and color setting information), device control through four dimensional acquisition (X,Y,Z lambda, time, multipoint etc.)
Video functions	Various professional functions: Video broadcast; Record & Play Back, Time lapse capture (0.1ms~10hrs interval); Video record; Video watermark; Move watermark; rotate watermark; Video stream grid; Video measurement; Video calibration, Gray calibration; video EDF; Image stitch; Video scale bar, date and etc.;
Image Editing Processing and Enhancement	Control and adjust image by contrast, brightness, gamma, colors, smoothing, sharpening, geometric corrections, denoise, all kinds of filtering algorithm and mathematical morphology algorithm; background subtraction, boolean math, ADD, OR, XOR , image scale, image print, backround compensation, Dark Field Correction, Cut/Copy/Paste, selected copy by free hand AOL. Resize, Crop/Duplicate/restore, conversion to other format like BMP, JPG, TIF
2D Measurement (Live & Capture)	Interactive measurements distance (length, width, arc, radius, angle) easy video or image calibration, auto calibration also available. various video and image measurement methods like area, perimeter, diameter, number of points, angle etc. measurement results can be hierarchical controlled according to characteristics or preferences. Area by enclosed line controlled by four arrow keys available on keyboard arrows with zoomed preview. With cross hair, digital grid, line profile display, arrow, line, quantity, linear, rectangles, circles, Point ellipse, polygon, irregular shape, circle-to-circle distance (graticule) and angle ruler, pitch distance, perform measurements directly on the live image, data saving, region & line measurement, Time & Volume measurement, Manual measurement like acquisition time, area, area fraction of percentage, circularity, intensity variation, length, line length, number object, orientation, perimeter, roughness, width etc. Annotation like, free hand drawing, straight line, square, Circle, arrow, Text, highlighter etc, pointer, eraser. Interactive measurement table, report creation arc, all measurements can be saved along with micron scale bar with accuracy of + 0.1μm and range as per FOV of Camera.
Image Stitching (Live & Saved Images/Panorama)	Image stitching can automatically combine a sequence of relevant images into a perfect larger one no requirement on the image order support video window, image window, browse window image stitching operation. It has an automatic algorithm for homogeneous illumination using shading (back ground) Correction

EDF(Extended Depth of Focus)	Aimed at generating a clearer image by combining a sequence of previously captured multi-focus images; Support video window, image window, browse window EDF operation. Provided with maximum contrast, weighted average, FFDSSD algorithms to meet with most applications. Consider image shift, rotation and scale in the EDF process to guarantee EDF accuracy & speed;	
Professional Segmentation & Count function	Integrate the advanced 6 image segmentation and particle counting algorithm (Watershed (W), OTSU Dark, OTSU Bright, RGB Histogram, HSV Histogram and Color Cube). Manual segmentation function (Split objects) ensures the success of a complete segmentation. Laplacing, sobel, Kirsh, Skelotizing, pruning, histograme equalization, histogram smoothing etc. The count result can be exported to Microsoft Excel for further analysis;	
Count & Classification	Identifying objects in an image, counting them, and measuring various features Object identification can be done manually or automatically. User-defined categorization based on size or intensity.	
Threshold Particle Measurement	Methods such as manual, auto bright, and auto dark are used to identify the intensity range defined object to be measured. Dimensions, Area, Perimeter, Ferrite Length, Min/Max Radius, Thread Length, Thread Width, Fiber Length, Fiber Width are some of the calculations and measurements available for selected particles.	
Segmentation	Calculate the area and volume fractions. Recognize multiple phases in Microstructure. Define phases from the histogram as well.	
Z-Stacking	This module is a digital image processing method that combines multiple images taken at different focal distances to produce a composite image with a greater depth of field (i.e. the thickness of the plane of focus) than any of the individual source images. It is especially useful for capturing sharp images of objects under low magnification. This method allows you to extract specific parts of a three-dimensional image.	
Report	Multiple options Direct printout with original image, processed Image & Tabulared results. Export to MS word or Excel for further modification.	
Image Stacking	Image stacking adopts advanced image matching technology with the recorded video, regardless of shifting, rotation, scaling, the high fidelity image can be stacked to decrease the image noise.	
Color Composite	Color composite adds appropriate pseudo color to monochrome fluorescence images. Fluorescence probe and color can be chosen from the pre-defined data-base. Dye database can also be easily created for special fluorescence probe.	
Other Features	Measurements of area intensities through image stacks, background subtraction & correction, parallax correction, full screen view, 2D/3D View, multi dimensional file format, Tool for Fluorescence In Situ Hybridization, Image orientation, light source selection, clockwise/counter clockwise, LUT, cascade, auto increase file name and single key capture, auto synchronize objectives, drag & drop data to excel, Online files Sending/receiving, interpolation, Macro Segmentation, optional computer control 3D volume, Sound recording, archival of digital image, objective lens selection, Undo, switchable between bright/dark design, online histogram for image optimization, Magnifier (zoom), Surface Plot, ND viewer, Image tiling, report database, report generator facility, three independent image containers, line & tag measurement, Digital reticle, image mixing/unmixing, cross hair, Deblurring, intensity surface plot, image display feature, live, documentation and archiving of digital images, Archiving with search for date, author, description, context sensitive customize interface for specific application, available upto 10 languages: English, Latin Spanish, Castilian Spanish, Italian, Russian, Japanese, Chinese, Korean and French etc., fully integrated with microscope & digital control, thumbnail worksheet, context sensitive, automated scale, Point to point measurement, manual EFI imaging full size live image, 'max. If frames per sec. VGA, SVGA, XGA and XVGA image formats etc.	

(iii)	**Branded Compatible Desktop Computer System** **Having following Specifications: -** • Intel core i5 Processor, • 8GB RAM; 500 GB SSD, DVDRW, • 24" LED Colour Monitor/Display, • Window 10 PRO (64BIT) OS, • Suitable Keyboard & Mouse, • USB 2.0 & USB 3.0, • Suitable UPS	01 No.
	Certification: The Offered Product is European CE, ISO 13485:2016 & ISO 9001:2015 Approved. Certificates copies are enclosed.	