

TECHNICAL SPECIFICATIONS AND OTHER ALLIED REQUIREMENTS

PUR/70/FOUNDRY/AP/E/2022-23

Sl.	Specifications	Quantity
01	SUPPLY, INSTALLATION, COMMISSIONING AND TRAINING OF HIGH RESOLUTION UPRIGHT OPTICAL MICROSCOPE (Details are as per ANNEXURE-I)	1 Set

1. QUALIFICATION CRITERIA

- 1.1 As mentioned in ANNEXURE-I

2. DELIVERY, INSTALLATION, COMMISSIONING & TRAINING

- 2.1. The delivery, installation, commissioning and training are to be completed within 150 days from the date of issue of Purchase Order. The installation & Commissioning shall be carried out by your expert-engineers of supplier/Manufacture. During installation & Commissioning necessary training on operation and maintenance of the goods/system shall be imparted to relevant Scientist/Engineers/Technicians.

3. WARRANTY

- 3.1 1 Year after successful installation, commissioning and training.

4. BID SECURING DECLARATION FORM

- 4.1 Vendor should provide BID Securing Declaration form as per given format in the Tender Documents.

5. PERFORMANCE SECURITY

- 5.1 Performance Security @3% of invoice value will be provided by the supplier within 21 days from the date of issue of Purchase Order.

6. Manufacturer Authorisation Form

- 6.1 MAF will be provided by the Non OEM supplier

7. MAKE IN INDIA LOCAL CONTENT

- 7.1 Make in India Local Content self-declaration Certificate with proper value addition (in percentage) will be furnished by the supplier as per format uploaded with Tender Documents.

Technical specification of High Resolution Upright Optical Microscope

Application: Observation, inspection & measurement of features in test sample of ferrous & nonferrous such as stainless steel, microelectronics, wafers etc. System must facilitate observation of objects of the size below 1 micron & high-quality live image is essential. It must also be equipped with professional tools & software for fast & reliable live imaging, image processing & measurements. Must be capable for inspection of material characteristic in material science and related application.

Trinocular electronically autofocused research upright metallurgical microscope for reflected light bright field, dark field, polarising & analysing observation along with digital scanning camera & image analysis software.

Eligibility criteria: System must be from OEM or authorized dealers with experience of supplying same make and model to at least two Govt. institutions or research labs. For every numerical point, bidder must have to write the exact value of their system; "complied", "agreed", "accepted" such words will not be allowed. Also, the brochure of the quoted model must be available for download on manufacturer's website.

Detail Specifications of the Microscope

Sl. No.	Unit/Part/Description	Specifications
1.	Zoom Magnification method	Motorized Stage
2.	Optical system	Telecentric Optical System
3.	Reflector Turret	Motorized 6 – Position Reflected Turret
Optics assembly		
4.	Optical zoom	10X (minimum)
5.	Objective lens	5X Objective 10X Objective 20X Objective 50X Objective 100X Objective
6.	Illumination & light source	<ul style="list-style-type: none"> Embedded standard or High Intensity Illumination Source. Six Mirror Cubes for different observation techniques like Bright Field, Dark Field, Polarizing – Analyzing. Future Upgradation for Differential Interference Contrast (DIC) & C-DIC. 12V 100Watt long life pre-centered Halogen Lamp with heat protection filter and aspherical collector lens assembly for perfectly even cold illumination. Incident Light filters i.e. LBD, Grey Filter 6%, Grey Filter 25%, White balance filter.
Camera		
7.	Image sensor	<ul style="list-style-type: none"> Min. 5.0 Mega Pixel True Chip Resolution. (2464 x 2056) (Cooled detector, other details viz. array size, Image size, sensitivity standard, A/D etc. to be provided.) The Camera should be controlled entirely from PC through Image Analysis Software. The software should be incorporated with all microscope control functions.
8.	Scan mode	Progressive scan
9.	Frame rate	36 fps @Highest Res. & 88 fps @ normal Resolution or better
10.	PC Interface	Through USB2 & USB3
Focusing unit		
11.	Focus	Auto (Motorized)
12.	Focus drive	Built-in Autofocus drive with minimum 50 nm or lower steps resolution.
13.	Stroke	100mm (minimum)
14.	Sample height	Objective dependent

Specimen stage & control unit		
15.	Stroke	Motorized, 2 axis microscope stage. Size: 130 mm x 85 mm or bigger. Moving stage must be, stable, vibration free, smooth and error free measurement at higher magnification. Vibration correction feature must be built in.
16.	Instrument Controller	Modular
17.	Resolution	0.02µm or better.
Image view & Measurement capabilities		
18.	Measurement Technique	Absolute and non-contact. Data to be derived from screen/sensor.
19.	Resolution	0.5 micron or lower
Screen		
20.	Monitor	Full HD color flat panel display
21.	Resolution	1920(H) × 1080(V) or better
Operation of the instrument		
22.	Instrument	PC controlled, mouse, joy stick etc. Operations like focusing, Zooming, illumination control, object location, auto focus, auto gain etc. GUI & Frame Mounted interactive Touch Control Monitor.
23.	Running time	Suitable for continuous use.
Software & tools		
24.	Examination & measurement tool	Shall be dedicated and integrated tool/software providing all results and analysis in numerical as well as chart/graph/photo formats.
Images, Results & Reports		
25.	Composite Image	Panoramic image from seamless stitching of images desirable in order to acquire area larger than field of view.
26.	Measurements & analysis	Touch count, Horizontal distance, Vertical distance, Arbitrary distance, Polygon Length, Enclosed angle, Area, Perimeter, circle and pixel value, chord length, Sorting Auto filter, statistics, XY diagram, Histogram based on data from result sheet. Pixel Maps, grey value histogram.
27.	Phase Analysis	Software should offer quantitative area percentage wise multiphase analysis like Ferrite, Perlite, Martensite etc. based on gray value distribution which automatically calculates the percentage and absolute area values of a phase distribution image. Datas should be displayed graphically with Bar Chart and evaluated statistically Measurement of up to 32 Phases should be possible.
28.	Grain Analysis	Must be able to measure Grain Size and Grain Boundaries. The report must reflect the grain size as per ASTM standard.
Warranty, Support and Training		
29.	Warranty	Minimum one year shall be provided.
30.	Support	After warranty the bidder must provide the necessary after sales support for smooth operation of the system for 5 years or more.
31.	Installation, Commissioning and Training	Installation and commissioning to be done by the vendor at the CSIR-CMERI and on-site hands-on training for at least 2 working days covering all aspects of equipment, operation and maintenance within two weeks of installation.