



INDIAN MARITIME UNIVERSITY

Kolkata Campus

Ref:-IMU/KC/Microscope dated 22.02.2018

Date: 16.03.2018

CORRIGENDUM-II

With reference to tender document no.: IMU/KC/ Microscope dated 22.02.2018 for providing 'Supply of Inverted Microscope for Research in Industrial Applications' at IMU-Kolkata Campus, Kolkata, the following amendments are being done in technical specifications i.e. Annexure-I.

The last date of submission of tenders, as mentioned in Corrigendum-I, is 22.03.2018, 1430 hrs and opening of technical bid is 22.03.2018, 1500 hrs.

All other terms and conditions of the tender document will remain same.

The sentences of Annexure-1, where modifications in technical specifications have been carried out, are highlighted in underlined. The modified Annexure 1 is as follows.

Technical Specifications for Inverted Optical Microscope for Metallurgical studies

Ambience

Indoor use, 15 ~ 35 deg. C with up to 90 % RH

Stand

- 1. Basic stand including 6-position objective nosepiece,**
- 2. High Definition Differential Interference Contrast motorized Z focus drive**
- 3. Minimum step 10 nano meter**
- 4. Frame mounted TFT touch-screen Monitor, keys for switching TL/RL illumination, circular operation key unit right and left, Light Manager and Contrast manager**
- 5. Interfaces CAN, RS 232, USB and TCP/IP, trigger socket (In/Out) for shutter,**
- 6. external power supply 100 or 240V AC/50Hz Single Phase**

Optics

- 1. Microscope should have infinity colour corrected and Fully Apochromatically Corrected optics with high contrast and resolution.**



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- 2. The microscope should be suitable for bright field / Dark field & should be upgradable to Polarization, DIC, Contrasting techniques.**

Nosepiece

Focusable Sextuple revolving objective nosepiece Motorized (should accommodate upto 6 objectives) mounted on ball bearing with highly precise click stops.

For Bright/Dark Field /DIC etc.. Having Automatic Component Recognition (ACR) Technique.

Binocular Tube

Binocular tube 45° with field of view 22mm on the microscope stand with swivelling eyepiece tubes with I.P.D. adjustable range 55-75 mm.

Illumination

Reflected light illumination to the stand with 100W tungsten halogen lamp. The lamp should be easily changeable. The power supply should be adaptable to voltages 90 – 250V.

Filters

Grey filter, blue filter, White balance filter.

Contrasting Techniques Module

- 1. Reflector Modules for Bright field & Dark Field Observation.**
- 2. Future Upgradable with Polarizer – Analyzer, DIC & Circular DIC.**

Objectives

Objectives plan-semi apochromat or equivalent 5x/0.13, 10x/0.25, 20x/0.60, 50x/0.7 & 100x/0.8 Bright /Dark Field.



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Eyepieces

10X Eyepiece; Wide field focusing eyepieces with 22mm field of view with soft rubber eyecups and should be suitable for spectacle wearers. It should be marked with ± 5 Diopter settings. The eyepieces should be suitable for reticule insertion.

Reflector Turret

Six position Coded reflector turret to house maximum of six Nos of Reflector Prism cubes. The Contrasting Modules should be easily insertable and removable in the reflector.

Digital Camera

Digital Camera resolution – Live Imaging with 5.0 Mega Pixel

Digitization: 8 and 12 Bit / Pixel, Spectral Range :300-1000nm, Dynamic Range: Typical > 4800 : 1,

Exposure : 0.1m.sec – 4 Sec. USB 3 interface, Live Frame rate : 2464 x 2056 - 36 fps. & 1232 x 1028 - 88 fps.

Complete integrated associated software for image capture, analysis and storage, and appropriate hardware interface & PC. C-Mount Camera Adapter to fix the camera on microscope.

Image Analysis Software

- 1. Advanced Image acquisition & analysis software for Image Grabbing, Processing , Annotation, with interactive measurements of intensity profiles, length, area, circle, angle, perimeter and counting of events; adjustment of display parameters without manipulation of pixel intensity values; Software module for overcoming the Depth of focus, Metallurgical analysis as per Standards like ASTM, JIS, DIN for Grain size measurement, Multiple Phase Analysis, Nodularity & Graphite Analysis, Non Metallic Inclusion Analysis, Generation of Analysis Reports, etc.**
- 2. Software can be Upgradable as per future requirement.**

Dust Cover

To cover the microscope when not is use.



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Computer

Branded Computer & LED Monitor should be provided from Local Source for Installation.

Other Important requirements:

- 1. Microscope, Camera & Software should be from same manufacturer.**
- 2. For all Specifications specified here along with equivalent are acceptable. However, the case of equivalency is decided by IMU or its appointed committee and its decision is final. No claims or arguments will be entertained.**

End of Annexure 1


DIRECTOR
IMU-KC