Tender Specification for Supply of <mark>Upright Metallurgical Microscope</mark> for Bright Field, Dark Field and Oblique Illumination/DIC/Circular DIC Application with LED Illumination, Digital Camera and Analysis Software
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Description: Trinocular Upright Microscope for Reflected Light with Bright Field, Dark Field, DIC/Circular-DIC (C-DIC)/Oblique Illumination with Digital Camera and High-end Autofocus Software with 3D Surface Package.

Microscope Stand: Upright, Frame Should incorporate with built-in transformer/power supply. LED Illuminator intensity control shall be frame mounted.

Motorized Focus drive: 3-step motorized focus drive: Coarse, Medium and Fine; Intermediate focus to enable better focusing in high magnification. Particularly using the motorized Intermediate focus. Smart move which needs to control Z movement precisely.

Aperture & Field Diaphragm: Built-in and adjustable Aperture & Field Diaphragms for easy adjustments according to the objective magnifications.

Reflector turret: Minimum Rotatable 4-position turret for Reflected Light Observations.

Objective Nosepiece: Minimum Rotatable 5-Position revolving universal nosepiece suitable for Bright Field, Dark Field, Polarization and DIC/C-DIC/Oblique Illumination.

Observation Tube: Trinocular wide field tube with the Field Of View of 22 mm or more with adjustable light path Selection

Illumination: LED illumination for reflected light.

Observation Technique: Bright Field, Dark Field, DIC/C-DIC/Oblique illumination, reflected light and optional for Polarization. DIC/C-DIC/Oblique Illumination is for studying the surface characteristics in pseudo 3D in colour.

Mechanical Stage: Appropriately ceramic coated scratch-free mechanical stage with x-y movement (stroke) minimum of 75 x 50 mm with the x-y control knob. Low drive control (long type) with provision to use either Left-hand side or right-hand operation. It should be possible to use both reflected light and transmitted light samples. The z-position of the stage should be adjustable and fix by screw.

Objectives: All objectives (5x, 10x, 20x, 50x, 100x) should be universal objectives suitable for transmitted and reflected light observations Bright Field, Dark Field, and DIC/C-DIC/Oblique Illumination applications.

Eyepieces: A pair of eyepieces of 10x with FOV of 22 mm or more with diopter correction for spectacle wearers.

Camera: Minimum 3 Mega Pixel or better microscopic CMOS / CCD camera. Pixel Size: 3.2 x 3.2 micron (or better), 30 fps. Live image displays through PC monitor with connection via USB 3.0.

Imaging Software:
Microscope shall contain below mentioned software's.

1. ***Interactive Measurement*** - It should be possible to perform measurements like distance, length, area, perimeter, diameter, Arc, angle, vector distance between 2 points, width and height and calculating areas and mean intensity. By tracing around the object of interest etc. on captured images. Data shall be exported to the user-defined report format.

2. ***Autofocus*** - Software module to control Z focus motor of an automated microscope and Z fine focus. Once Define focus positions and capture 3-dimensional data sets. Should include software autofocus.

3. ***Software for 3D Surface Package*** - A software package for 3D Surface to allow for generation, reviewing and measurement of 3D surface views originating from image z-stacks. It should contain Extended Depth of Field (EODF) - 3D Surface Viewer -3D image can be zoomed, manoeuvred or rotated to provide a comprehensive view of a specific feature

3D Surface Measurement-Tools should be available to measure distances, height, volumes (concave or convex relative to a reference plane), surface areas and surface distance (profile sections). In addition, the analysis results should be easily exported to a report template.

Optional Software: Grain-size analysis (using intercept method and simulates appropriate industry standards) and Phase analysis

Microscope, Camera and Software shall be provided from a single manufacturer for better synchronization.