NASA AMES RESEARCH CENTER
RFQ# NNA10312986Q-AWQ
Revised Specifications – see added item # 10a.

The laser confocal microscope system shall have the following minimum requirements:

Laser Scanning Head Specifications;

1. Universal Scanning Head for Confocal, Non-confocal laser acquisition, Brightfield and DIC (differential Interference contrast), and Polarized Light optical techniques.
2. LED Illumination for white light observations in brightfield, polarized light, and DIC.
3. Confocal Circle Pinhole + Dual Photo Multipliers for both confocal and non-confocal laser inspection.
4. 14,400x with resolution of 0.120*u*m XY and 0.010um in Z
5. Auto Focus
6. User adjustable laser gain control during acquisition with live image composition during stack scanning.
7. Multiple gain settings for acquisition based on Z position for extended dynamic range control.
8. Six times optical zoom in .1x increments.
9. Polarizer and analyzer slots built into scanning head with provision for DIC prism for conventional microscopy.

Objectives:

10. a. MPLAPO100X408 NA=0.95, WD=0.35mm
    b. LMPLFL50X NA=0.50, WD=10.6mm
11. MPLFLN20X NA=0.45, WD=3.1mm
12. MPLFLN10X NA=0.30, WD=11.0mm
13. MPLFLN5X NA=0.15, WD=20.0mm
14. Revolving nosepiece up and down motion (for measurement), moving resolution 0.01µ
15. Stroke 10mm Coarse manual Z stage (for alignment)
    Fine handle Stroke 70mm (and head position adjustable with further +30mm).
16. Maximum object height: 100mm + standard on adjustable dovetail or 145mm available.
17. Manual 100mm x 100mm stage

Imaging Station

18. Image data: OLS format / BMP, TIFF, JPEG, profile should be able to save as CSV file, measurement data should be able to transfer to excel.
19. Data Processing: Noise removal function should be available to remove noises at isolated points and noises caused by profile correction, and height noises caused by insufficient light intensity.
20. Tilt correction: the tilt of an image should be corrected manually or automatically.
21. Filter: A smoothing filter, an enhancing filter, and one- and two-dimensional
22. Frequency filters should be available.

Data Analysis Metrology Suite:

23. Distance/volume measurement: It should measure a distance and a level difference between two given points, and a distance between two averaged points on a rectangle or on any shape, and a volume of the area designated with points.
24. Line width measurement: It should measure a line width of any specified cross section, and a correction factor for data measured in the X direction should be able to set.
25. Geometrical measurement: It should measure a circle, a rectangle and other geometrical forms, and also measures angles on the XY section profiling or 3 dimensional image.
26. Particle analysis: It should measure an area, volume, gravity point, etc., of each particle in an image. Also the total number, total area and area ratios of particles should be able to display.
27. Cross-section measurement: It should measure and display a profile of any specified cross section.
    Area and volume: It should measure an area, surface area and volume of any specified part.
28. Two-dimensional roughness: It should be able to profile curves, roughness curves and waviness curves of any specified cross section can be displayed.
29. Report output: It should provide a report of the measurement result of line width / Particle analysis /Sectioning, roughness.
30. Calibration: The instrument should be able to set the correction factors for data measured in each of X, Y and Z direction.