

## SPECIFICATIONS

Iowa State University is soliciting bids to provide a Digital Microscope System with 3D measurement capabilities for the Polymer and Food Protection Consortium. The system should include a digital camera, and objective with automatic motion along its main axis (Z-axis), and an integrated computer with software and display. This system will be utilized primarily to perform surface profile measurements of samples such as coating thickness, plastic part defects, contamination scan and 3D print, fracture morphology.

Prior to award of any contract, ISU reserves the right to request demonstration of the system(s) and/or sample runs in order to verify the proposed system will be acceptable to the University.

Systems offered must meet the minimum specifications (or equivalent/similar) stated below:

- Red or Violet Laser Microscope head
- Portable and shippable by plane
- Ability to perform surface measurements of such as coating thickness, plastic part defects, contamination scan and 3D print, fracture morphology
- Integrated LCD monitor with at least 1400x1050 pixels resolution
- Hard Disk Drive larger or equal to 1TB
- Pictures saved have metafile with date, time, scale bar, and magnification information
- XY measurement – line, radius/diameter, angle, area, particle counting
- Motorized stage for microscope base
- 3D measurement features
- simple mechanism of 2D and 3D image stitching to increase the normal field of view of a measurement, by up to 5 times in both the x- and y-direction
- Color camera and color image files
- Automatic white balance feature
- Automatic focusing feature
- Including 5 objectives 5x, 10x, 20x, 50x, 100x
- Thin film filter and calibration standards included
- Accuracy measured value +/- 2% or less
- Accuracy for Z-axis measurement: 5 nm or better
- Repeatability approx. 10nm for width
- Repeatability for focus variation at 50x: approx. 65nm for width and approx. 30nm for Z
- Camera/Lens can be tilted approximately 150 Degrees
- Vibration insulation
- Motorized Z Axis control with at least 20 mm of travel
- Z-axis stepping motor with step height  $\leq 1$  micrometer
- Less than 30s for image acquisition time at maximum magnification
- Operating and analysis software included
  - Thin film software module and measurement module included
  - Minimum 3 standalone computer software licenses for standalone analysis
- System to be offered complete with all parts installed in ISU's designated laboratory
- Minimum one day on-site training is required after installation
- Minimum one year warranty is required