

**Equipment Specifications for**  
**High-Resolution Multiscale Nanotomograph**

- 1. OBJECTIVE:** The objective of these specifications are to provide industry with the salient characteristics that will be evaluated to determine technical acceptability.
- 2.** Please see solicitation provision FAR Part 52.211-6 – Brand Name or Equal. High-Resolution, Multiscale Nanotomograph will be evaluated on a Brand Name or Equal Basis.

**3. REQUIREMENTS:**

Brand Name or Equal Specifications:

Model: SKYSCAN 2214 – High-Resolution Multiscale Nanotomograph

- X-ray Source Open (pumped) type with diamond window 20-160 kV, 13 W max.
  - Open source with oil-free automatic vacuum system
  - 20-160 kV with tungsten filament, 20-100 kV with LaB6 filament
  - Tungsten transmission target on diamond window, max. 16 W
  - Spot size/resolution (with JIMA card): 0.8 micron with tungsten filament, < 0.5 micron with LaB6 filament
  - X-ray filter changer (for CCD detectors) with 6 positions
  - Maximum scanned volume: up to 140 mm in diameter, up to 130 mm in length
- Positioning system
  - Eleven axis positioning system
  - Air-bearing direct drive for object rotation, < 50 nm runout
  - Integrated micro-positioning stage, 8 mm travel in any direction
  - 80 mm object elevation travel
  - Precision motorized alignment for object stage and cameras
- 6Mp shielded CMOS visual camera for monitoring the object position inside specimen chamber and with possibility to save image of the object in BMP, JPG or PNG format
- System dimensions: W 1800 mm x D 950 mm x H 1680 mm and weight 1500 kg. Power: 100-240V AC, 50-60Hz, 1000 W (excl. workstation)
- Multiple sample mounts with metal and carbon-fiber support for different object sizes
- Sample holder for large objects
- Alignment pin
- Five pre-aligned cathode assemblies with W filaments (one – installed in the source)
- Two pre-aligned cathode assemblies with LaB6 filaments
- Industry-grade oil-free compressed air, meeting ISO 8573-1:2010 [5:4:4]
- 11MP CCD DETECTOR, LARGE FIELD OF VIEW
  - The 11Mp CCD detector with demagnifying 2:1 taper provides a large field of view.
  - Number of pixels: 11 megapixels, 4008 x 2672
  - Pixel size at max. magnification: < 250 nm
  - Pixel size for a 4 mm object diameter: 400 nm
  - Pixel size for a 100 mm object diameter: 3 micron
  - Max. scanning diameter: 45 mm (single position), 89 mm (two positions)
  - Energy range: 20 kV to 160 kV
- 8MP CCD DETECTOR, HIGH RESOLUTION

- Number of pixels: 8 megapixels, 3300 x 2470
  - Pixel size at max. magnification: < 60 nm
  - Pixel size for a 4 mm object diameter: 100 nm
  - Pixel size for a 100 mm object diameter: 700 nm
  - Max. scanning diameter: 8 mm (single position), 16 mm (two positions)
  - Energy range: 20 kV to 100 kV
- Workstation
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  - Intel Xeon W-2265: 12C, 3.5GHz, 19.25 MB Cache
  - 128GB, 2933MHz DDR4 memory
  - 16 GB NVIDIA® Quadro® Graphical card
  - 4x 2 TB PCIe NVMe Class 40 SSD in RAID 0 for data
  - 512 GB SATA Class 20 SSD for operating system and software

**4. DELIVERY DESTINATION:** [REDACTED]/MSIC Building 4545 Fowler Road, Redstone Arsenal, AL 35898