

ITEM OPPORTUNITY SYNOPSIS

Scouting Number: 2023-164
Name of the item to be scouted: Scanning Electron Microscope for Automated Particle Analysis
State item to be used in: Maryland

Describe the Item:

Please describe the item application/the end use of the item.

High-resolution variable pressure scanning electron microscope. Schottky field emission scanning electron microscope Software application programmer's interface (API) capable of controlling all major instrument functionality using Python or similarly capable open-source programming language. Software sharable with collaborating laboratories under a permissive license. API documented to permit API use by programmer's familiar with developing software for instrument control. Sample chamber with a motorized stage with X, Y and Z travel of at least 50 mm in each dimension. Stage with motorized tilt and rotation axes. Stage must be under API control. Vacuum system in the sample chamber. Vacuum system must be under API control. Sub-microsecond response-time backscattered electron detector, Secondary electron detector, Images from all electron detectors acquirable under API control. In-Beam secondary electron detector. In-Beam low energy backscattered electron detector. Support two or more simultaneous energy dispersive X-ray detectors which provide both spectra from both individual detectors and the sum of spectra from all detectors. An implementation of NIST rotating chord analysis (RCA) particle analysis algorithm or equivalent particle search, sizing and analysis algorithm implemented for automated analysis of microparticles from 250 nm to 100 µm. The algorithm must be fully accessible using the software API. The algorithm should be capable of analyzing >8,000 particles/hour with energy dispersive spectroscopy (EDS) acquisition times of 300 ms/particle on a suitable sample. The algorithm must facilitate collecting X-ray spectra using all EDS detectors.

Supplier Information:

Type of Supplier Being Sought (select from the list below):

Manufacturer x
Contract Manufacturer
Distributor
Other (Please Specify)

Reason for Scouting Submission (select from the list below)

2nd Supplier
Price
Re-Shore
Past supplier no longer available
New Product Startup
BABA
Other (Please Specify) No known US manufacturers

Summary of Technical Specifications and Performance

Requirements:

Describe the manufacturing processes (elaborate to provide as much detail as possible)

Skills and experience required: High vacuum, high voltage, precision beam control, electrostatic lenses, motion control, system integration with 3rd party vendors, thermal field emission sources and power supplies, electron detectors and digital signal processing.

Provide dimensions / size / tolerances / performance specifications of the item

One nanometer imaging resolution and one micrometer stage reproducibility.

List required materials needed to make the product, including materials of product components, if applicable

High vacuum compatible stainless steel and joining techniques.

Are there applicable certification requirements?

Yes
No x
Please explain:

Are there any applicable regulations that apply to the production of this item?
Yes

No
Please explain: x

Are there any other standards / requirements?

Yes
No x
Please explain:

Additional Comments:

Additional technical comments: This is not just a scanning electron microscope but one that has been engineered to perform precise chemical analysis of thousands of particles per hour.

Volume and Pricing:

Estimated Potential Business Volume (i.e. #units per day, month, year): NIST is looking for one, there is market for more but already competitive among non-US manufacturers.

Estimated Target Price / Unit Cost Information: \$700.00

Delivery Requirements:

When is it needed by? (Immediate, 30 days, 6 months, etc) 3 months

Describe packaging requirements (i.e. individually / group packaging, etc) Usually Palletized.

Where will this item be shipped? Gaithersburg, MD 20899

Additional Comments:

Is there other information you would like to include?