NASA Ames Research Center
RFQ# NNA09308294Q-B-AWQ

ENERGY DISPERSIVE X-RAY ANALYSIS SYSTEM – "EDS"

SPECIFICATIONS:

The minimum requirements for the system are as follows:

(1) The system shall be fully compatible physically and functionally with the existing Leica S360 SEM; LaB_6 and tungsten filaments.

(2) The system shall have a detection range from Beryllium to Plutonium.

(3) The system shall not require liquid nitrogen, chillers, compressors, or gas lines.

(4) The system shall have a motorized slide for placement and retraction of detector to and from the sample.

(5) X-ray Detector resolution performance shall be better than: 72eV (FWHM) at 20,000cps at Carbon K_α, 75eV (FWHM) at 20,000cps at Fluorine K_α, and 129eV (FWHM) at 20,000cps at Manganese K_α; measurements in accordance with ISO 15632.2002.

(6) The system shall process spectrum with guaranteed spectral shift of less than 1eV and a resolution change of less than 1eV between count rates of 1000cps to 100,000cps. User pulse processor calibration shall not be required.

(7) The system shall be able to accurately resolve Molybdenum M_Z line from C K_α line and be able to show clear separation of the Silicon L_1 line from the noise peak.

(8) The system shall automatically identify elements with better than 99% accuracy for entire detection range.

(9) The system shall collect maps in excess of 200,000cps real throughput.

(10) The system shall be able to map and show clear separation of Boron and Carbon precipitates as small as 1000nm contained within a same matrix with an acquisition time better than 5 minutes.

(11) Spectrum reconstructed for x-ray maps shall be fully quantitative. Map review, spectrum reconstruction, and overlay manipulation shall be available while continuing to collect mapping data.

(12) The system shall quickly and accurately identify sparsely distributed, and trace, elements and phases not detectable when viewing the spectrum generated from spectral maps.

(13) The system shall trap incoming electrons to produce interference-free analysis at all energies with no image distortion in the SEM.

(14) The system shall correct for beam drift of a charging or drifting sample during spectrum and map acquisition.

(15) The system shall automatically correct and properly associate piled up peaks (when a second pulse is combined with the previous pulse arriving at the detector) back into their proper energy locations.

(16) The system shall perform quantitative analysis incorporating automatic peak deconvolution and background removal with high-demonstrated accuracy.

(17) The user interface shall incorporate a navigation structure for process step selection throughout the analysis.

(18) The user interface shall include integrated help menus for all microanalysis processes and microanalysis encyclopedia with comprehensive description of microanalysis terms, background and theory.

(19) The user interface shall include integrated tutorials and expert advice for performing analyses and achieving good results.

(20) The system shall share all available data between analysis steps without user involvement.

(21) The region of analysis shall be easily selected by point, freehand draw, rectangular region, line, grid, and automatic phase outlining methods.

(22) The system shall utilize an information management system that automatically stores data with project, sample, and site hierarchy and provides an audit trail.

(23) The systems shall include professional quality templates and a template configuration tool to easily combine any and all data components. Templates shall be created and modified within the system itself without the use of third party software. Templates can then be output to Microsoft Word or as HTML.

(24) Warranty period: minimum one year.