Statement of Specifications:
Micro X-ray Fluorescence Analyzer optimized for elemental mapping of geological materials

Scope:

NASA Ames Research Center has a requirement for one versatile energy dispersive micro X-ray fluorescence (ED-XRF) system for two-dimensional elemental mapping of geological samples and high precision/accuracy elemental quantification of homogenous sample pellets or pucks. The desired micro-XRF system shall be configured to be flexible, enabling a single system to be used for both of these applications.
The system shall provide position sensitive elemental analysis for all elements with an atomic number from 11 (Sodium) and higher, with variable beam diameters suited to the applications described above.

System Description:

Radiation Enclosure, X-ray Tube:

X-ray Tube:	Sealed tube assembly, Rh Target
Maximum power:	30W or more
Voltage:	50 kV
Enclosure:	Radiation protected, evacuable sample chamber. Must meet all California State radiation and safety codes.
Vacuum System:	To provide oil free evacuation of instrument sample chamber.

Sample Stage:
Computer controlled motorized sample stage for sample positioning and mapping.
Stage travel (XYZ) of 100mm x 100mm x 100mm, or more.
Optical imaging of sample within chamber.

Sample Excitation:
The system must have the ability to switch between two X-ray beam sizes for exciting the sample, depending on task being undertaken.
The system requires: 1) a narrow beam setting with a polycapillary focused X-ray beam size of less than 50 microns for high intensity, high resolution elemental mapping, and 2) a wider beam setting, 1 mm or greater for elemental analysis of homogenous samples. This functionality may be achieved by having two X-ray tubes with accompanying optics to produce X-ray beams of the appropriate sizes. Or two sets of optics coupled to a single X-ray tube that are readily exchanged with minimal requirements for realignment.

Excitation radiation shall have the option to be optimized for detection of specific elements using filters.

Detector:
Fluorescence spectrum acquired using a silicon drift detector.

Software and computer:

All system operation/control and data evaluation software including peak identification, artifact and background correction, peak area calculation, quantification by reference material and/or standardless analysis, distribution analysis, statistical evaluation, line and area scanning shall be included in the offered price.

Software should be capable of exporting XRF spectral data in a non-proprietary format that can transformed and used by other analysis software, specifically *pyMCA (http://pymca.sourceforge.net/faq.html).*

Supplied computer system shall be compatible and capable of efficient control of micro ED-XRF system and running all related software.

Two additional copies of the analysis software are required for installation on other computers.

Training, Installation, & Warranty:

The system shall be installed by a factory trained service engineer. Installation shall be coordinated with NASA ARC at least 48 hours prior to shipment. At least 24 hours of Basic operation and instrument maintenance training for up to three personnel shall be provided by the installing engineer upon completion of installation.

Following installation, at a mutually-agreeable time, the vendor shall provide on-site applications training at NASA Ames Research Center, Moffett Field, CA to cover sample preparation, system operation, and data analysis using all software programs. This training shall be up to 24 hours and shall include up to three personnel.

A one-year full system warranty shall be included in the firm fixed price.

Delivery:

Delivery shall be FOB destination, within twelve weeks following award order.