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TENDER DOCUMENT FOR THE PURCHASE OF
MICROFOCUS-EDXRF SPECTROMETER

TENDER No. – PHS 12/37 Dated Jan. 4, 2012

DATE OF ISSUE : Jan. 4, 2012

LAST DATE OF RECEIPT OF TENDER: Jan. 30, 2012, 3:30 PM

DATE & TIME OF OPENING: Feb. 6, 2012 , 3:30 PM

TENDER FORM FEE Rs. 1000/-
EARNEST MONEY DEPOSIT (EMD) Rs. 30,000/-

Tender Specifications for Microfocus EDXRF system

Microfocus Energy Dispersive X-ray Fluorescence (Microfocus-EDXRF) spectrometer based on X-ray Poly-capillary lens for high precision quantitative multi-point analysis and element mapping is required for the samples from different scientific fields as per our requirements. The spectrometer should be able to analyse elements ranging atomic number (Z) = 13-92, i.e., from Aluminum to Uranium, in concentration range from ppm level to 100 % in solid form. The system must have computer-controlled XYZ stage for easy sample positioning and internal high magnification CCD camera to locate the area of interest. It should record location and corresponding X-ray fluorescence spectral data for desired duration at every pixel in selected area and perform necessary analysis for elemental mapping. It must be radiation safe spectrometer while in use. Please provide a compliance statement along with the Technical bid.

The specifications and configuration of microfocus EDXRF spectrometer are as follows:

(1) GENERAL

All kinds of safety protection for radiation, electrical, electronic should be in built as per International regulation / norms. 230V, 50 Hz single phase operation as per Indian standards. Working atmosphere – Temperature 15°–30° and Humidity 40% - 70%.

(2) SAMPLE HANDLING

The instrument should be capable of handling solid sample mounted in appropriate holder mountable on XYZ stage. The XRF sample scanning should perform complete unattended operations and should have facilities for sample analysis over locations in defined regions.

(3) X-RAY GENERATOR UNIT

(a) X-ray tube - Air-cooled Mo/Rh X-ray tube, Be window, power 50 W (50 kV, 1 mA) or more. Specify the X- ray tube parameters in details.

Unconditional two years warrantee for x-ray tube. Down period will be excluded from the warrantee period.

(b) X-ray power unit – Generator of 50 W or better with ability to vary voltage up to 50kV or better and current up to 1000 μ A or better in suitable steps. Quote the step size and the minimum values of voltage and current. HT Stability better than +/-0.01% for Mains

stability +/- 10 %.

A built in control unit (microprocessor/microcontroller) to control all important functions monitor tube life, temperature, and status of other important parameters.

Flawless safety mechanism against over-voltage, over power, over-current, over-load, abnormal input mains voltage, and temperature. Interlock on operation panel etc. Options of X-ray power Manual and Auto start-up/shutdown.

Necessary software and hardware for remote diagnostics capable of checking the equipment parameters/calibration etc.

(4) OPTICAL PATH

(a) X-ray optics

Capillary optics X-ray poly-capillary lens

Spot size less than 50 μm (below 20 keV)

Necessary inbuilt system to keep the polycapillary optics dust free.

(b) Primary X-ray beam filters Exchangeable filters – 4 nos.

For example - Al, Ti, Ni; Zr; or similar set of suitable four or more filters of required thickness to cover the Al-U elemental range and compatible with the supplied X-ray tube.

(5) DETECTOR AND DATA ACQUISITION SYSTEM:

Lithium-drifted silicon detector cooled using liquid nitrogen, **OR** Peltier-cooled Silicon Drift Detector, for optimum coverage of entire elemental range $_{13}\text{Al}$ - $_{92}\text{U}$. Resolution better than 160 eV at Mn-K α X-ray at count rates below 10 kcps.

Data acquisition system - Variable Gain Amplifier (pole-zero cancellation) compatible with the detector and 4k Multi channel analyzer (MCA) with deadtime correction.

Warrantee period of two years.

Transmission image - optics and scintillation detector OPTIONAL

(6) SAMPLE CHAMBER

A radiation-safe sample chamber.

(a) Sample stage - Computer-controlled X-Y-Z stage. Standard sample holder and mounting arrangement.

(b) Minimum X-Y-Z Stage stroke : 100 mm x 100 mm x 25 mm, Step size better than 10 μm .

Mountable Sample size – bigger than 200mm (W) x 300mm (D) x 50mm (H) and weight at least than 1 kg. Automatic stop of stage movement to avoid collision of measuring head components.

Analysis diameter about 50 μm (below X-ray tube $K\alpha$ X-rays)

Working distance more than 5 mm

Atmosphere - Air (optional – Vacuum)

Viewing sample image using camera - CCD color camera, magnification better than 75x

Optional – Additional 10x color CCD

Illumination controlled lighting optics, Image size better than 640 x 480 dots

Sample focusing - Autofocus, Laser pointer.

(7) CONTROL AND ANALYSIS SOFTWARE WITH LICENSE

Extensive analytical software package (WINDOWS based) for data handling and processing, qualitative and quantitative analysis of various kinds of samples.

Necessary software and hardware for diagnostics capable of checking the equipment parameters/calibration etc.

Spectrometry software based on Fundamental parameter (FP) method, Calibration curve method, Internal standard method, matrix correction based on different mathematical models, Blank correction, line overlap correction, background correction, smoothing, Auto peak identification, Energy and FWHM calibration, calculation of concentration functions for quantitative analysis, full screen color graphic capabilities, limit checks, Statistical analysis, data storage and retrieval and other necessary features.

Mapping Analysis - Mapping analysis for selected area with background correction, high-speed mapping, Elemental mapping, Full-profile mapping, ASCII file output of Quantitative data.

Display features - Changing threshold, display color, shade, line, mesh, contour display, Overlay processing, Extracted line profile display, various filters, Zoom-in, Changing resolution. Printing and Saving Image, multiple images.

Data Processing

Real-time viewing sample image (Size better than 640 x 480 dots), saving an image with scale, mosaic image of entire stage area, display settings, Video settings.

Stage Movement: Computer-controlled XYZ stage, Registering the position, Read / write position file, Multipoint analysis mention at least 200 points.

Maintenance

Instrument monitor - X-ray tube output, dead time, count rate meter, filter position, door open/close, temperature of detector, etc.

Transmitted image - Measurable transmitted image using **optional** detector unit, supply necessary software and acquisition.

Single-User License for Data acquisition software and **Two-users** License for Data handling and analysis software.

(8) COMPUTER SYSTEMS

Branded latest configuration high-end PC with high capacity Hard disk and CD/DVD writer drive, 19" TFT Color monitor, Key board, mouse, color laser jet branded printer. The PC equipped with latest licensed windows operating system should be quoted for data-acquisition and analysis purposes. One similar configuration computer with B/W laser printer for networking with main computer to be included. It will be used for handling and analysis of Data from the Microfocus EDXRF spectrometer.

(9) WARRANTY

Two year warranty at site basis including all hidden cost. Purchaser will not pay any amount during warranty period. Down period will be excluded from the warranty period.

(10) SPARES AND CONSUMMABLES

Necessary spares and consumables [other than X-ray tube that is to be provided by the vendor without cost during first 2 years of warrantee period] required for smooth and efficient operation of X-ray generator and spectrometer should be available for 2 years.

Also, quote for the X-ray tube if required after 2 years of warrantee period (as an option).

(11) COMPLIANCE

Vendor should take all necessary responsibility to quote for configuration to suit all the above applications. It should be clear that all the required features must be clearly mentioned, so that at the time of making comparative statement – we must not end up in any trouble.

SECTION – I

PROCEDURE FOR SUBMISSION OF BIDS

1. There will be **Two bid system** for this Tender: *Techno-Commercial bid* and *Financial bid*
2. The Techno-Commercial Bid of the Tender should be covered in one sealed cover superscribing the words “Techno-Commercial Bid”.

Likewise, the Financial Bid should also be covered in a **separate** sealed cover superscribing the words “Financial Bid”.

The two documents viz., Techno-Commercial bid and Financial bid covers prepared as above should be enclosed in a single sealed cover marked as under:

Tender for the supply of MICROFOCUS-EDXRF

Due on 30 Jan. 2012, 3:30 PM (last date for submission).

Name & Address of the Tenderer.....

Note: Price should not be indicated in the Techno-Commercial bid otherwise the Tender will be rejected

3. Tenders received after the due date will not be accepted. If the last date for submission of Tender falls on any declared holiday in the University, the next working day will be considered as the last date for the same.
4. The bids prepared by the Tenderer and all correspondence and documents relating to the bids, shall be written in English language
5. The contract for the supply of the items is non-transferable.
6. Tender/Offer should be type written, other wise the same will be rejected
7. Each page of the tender document should be signed by the authorized signatory.
8. Each offer should be complete in all respects.
9. Telegraphic/electronic/conditional offers will not be accepted.

SECTION – II

TERMS AND CONDITIONS

1. **Opening of bids:** Techno-Commercial bids will be opened by the Committee after the closing date and studied. The Tenderers will be invited for presentation and clarifications if needed. Financial bids of the Tenderers complying with the prescribed Techno-commercial specifications will be opened by the Committee. Tenderers or their authorized agents may be present if they so desire during opening of the Tenders.
2. **Rejection of bids:** The Committee reserves the right to reject any or all offers without assigning any reason.
3. **Earnest Money deposit (EMD) :** The Tender bid should accompany an EMD of **Rs. 30,000**. The EMD should be made by means of an A/c payee DD in favour of the *Chairman, Department of Physics, Panjab University, Chandigarh-160014* payable at Chandigarh. No interest is payable on EMD.
4. **Refund of EMD:** The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
5. **CIF value and comparison of Financial bids:** CIF value upto *Department of Physics, Panjab University, Chandigarh (shipment by air upto Delhi and insured up to the installation site)* should be quoted. and will be considered for comparison of bids. Bids quoted in foreign currency will be converted into Indian Currency at the exchange rate applicable on the day of opening of the financial bids for comparison purposes.
6. **Warranty Period:** The warranty period should be *minimum 2 years (with spares)* from the date of installation with satisfactory performance as per specifications. *2 years free service* to be provided after the warranty period.
7. **PBG:** Tenderer selected for supply of equipment, will have to provide Performance Bank Guarantee (PBG) on any *scheduled bank situated in India, equivalent to 10 percent of the cost of the equipment* which should be valid until the expiry of the Warranty period. The PBG will be provided by the Company along with the letter of acceptance of the order by the Principals. Letter of Credit (LC) will be opened in favour of the Principals only after obtaining the PBG.
8. **Terms of Payment:** LC will be opened for the 100% value of the equipment, 90% of the amount will be released after the shipment and remaining 10% after the installation of the equipment.
9. **Delivery period :** Delivery should be made within *120 days* of opening of the LC
10. **Delayed delivery:** If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty as under:
 - i First extension for one month or part thereof @ 2%.
 - ii Second extension for an additional month or part thereof @ 3%
11. **Non delivery beyond extended period:** If the Tenderer fails to execute the order within the second extension mentioned above or mutually agreed time frame, the order will be cancelled and EMD forfeited by the Dept. He will also be liable for all damages imposed by *Department of Physics, Panjab University, Chandigarh* for non supply of equipment including the liability to pay the difference

between the price accepted by him and those ultimately paid by the *Department of Physics, Panjab University, Chandigarh* for the equipment, Such damages will be assessed by the Committee for the purchase of MICROFOCUS-EDXRF Spectrometer.

12. Increased statutory levies and duties above the rate quoted in the offer will not be an excuse for the Tenderer to delay the supply beyond the date specified in the Tender.
13. **Validity of rates:** Rates quoted should be valid for at least *4 months* from the closing date of the tenders.
14. **Consistent pricing:** The rates quoted for the Equipments by the supplier shall in no case exceed the lowest price at which the supplier of this Equipments of identical description made to any other person/organization/Institution during the above said period and should attach an undertaking in this regard
15. **Installation requirements:** The Supplier will clearly mention installation requirements on our part in the *Techno-Commercial bid*.
16. **Installation time:** The company must install the equipment *within a period of two months* of the date of delivery of the equipment at *Department of Physics, Panjab University, Chandigarh*.
17. **Free Installation:** The equipment and software should be installed and tested to the specifications *free of cost*.
18. **Supporting Equipment:** The Tenderer will provide all requisite supporting equipments like isolation transformer, step down transformer, *if needed*. We need the complete installed system.
19. **Licensed Software and its upgradation:** *Two user licences* for analysis software should be provided. The certified/licensed software and programs should be the part of the supplies. There should be *free upgradation of software up to 5 years*
20. **Factory Acceptance Data:** Proposed acceptance criteria for the equipment should be provided by the supplier. in order to compare the performance against the quoted specifications. *Manufacturer's test certificate along with test conditions and results* is to be supplied along with the equipment.
21. Tenderers are advised to study all technical aspects and terms & Conditions, of the Tender documents. Submission of Tender shall be deemed to have been done after careful study and examination of the Tender Document with understanding of its implications.
22. **Only Manufacturers or Authorized dealers to bid:** The offering firm should clearly mention whether they are the manufacturer or authorized agent/dealer of the manufacturer. In case of agent for overseas manufacturer, a letter of authorization from the manufacturer should be submitted along with the offer. The Tenderer can also enclose the rates on the letterhead of the manufacturer if he has been authorized to do so by the manufacturer.
23. **Descriptive literature:** A set of specifications, description and illustrated literature of the equipment and related peripherals *should accompany the Techno-Commercial bid*.
24. **User and Service Manuals:** A set of User's manuals and Service manuals of the main instrument, attachments and related equipment should be supplied with the equipment

25. **Equipment must be new:** The Tenderer must ensure that the equipment being offered is a new one and not refurbished or repaired one.
26. **Defective Equipment:** If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, unmerchantable or not in accordance with the description /specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment has already been made to him.
27. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges.
28. **Damage during transit:** In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. *Department of Physics, Panjab University, Chandigarh* will not be liable to any type of losses in any form.
29. **Legal jurisdiction:** Any dispute in this regard of any term of the offer and on the supply of equipment is subject to *Chandigarh jurisdiction* only.
30. **Training** Two weeks training should be provided free of charge at the premises of *Department of Physics, Panjab University, Chandigarh* out of which one week should be on equipment usage & software and one week in maintenance and application including sample preparation.
31. **Availability of Spares:** The Tenderer must assure the availability of spares for servicing of equipment *for at least 10 years*. Supplier should give an undertaking that spares parts will be supplied within the specified periods as and when ordered.
32. **Infrastructure:** *Department of Physics, Panjab University, Chandigarh* will provide required air conditioned space, *single phase power supply* with required electricity outlets.
33. **Clearance:** The Principals will do all types of clearance work to deliver the equipment at the site of installation. Department will provide all types of documentary support including Customs Duty Clearance. Principals will themselves have to procure any requisite permission from the Govt. of country of origin of equipment.
34. **Agency Commission:** Agency commission, if any, should be clearly mentioned by the Principals in the form of a certificate and will be paid in Indian Currency.
35. **Bank Charges:** Bank charges in India will be borne by the Panjab University and Bank charges abroad will be borne by the suppliers.
36. **Similar Models installed:** The Tenderer must mention in the *Techno-Commercial bid* the similar model of equipment installed in India *during the last two years* and the *addresses of contact persons at these places*.

37. **Application Specialist:** The Tenderer should mention in the *Techno-Commercial bid* the availability and *names of Application Specialist and Service Engineers* in the nearest regional office.
38. **Response Time:** The Tenderer should mention in the *Techno-Commercial bid* the response time for attending to a complaint about the equipment.
39. **Change of Indian Representatives:** The original manufacturer/Principals should give an undertaking that the aforementioned warranty and availability of spares clauses will be valid even in the case of change of their representatives in India.