

Department of Geology, University of Kerala

Kariavattom, Thiruvananthapuram

e-Tender Notice

TENDER –PI.A1 No. 12999/GOL/17

Dated 03.01.2018

E-Tender Notice

Department of Geology, University of Kerala, Kariavattom invites open tender through e-Procurement (two cover system) from the Original Equipment Manufacturers or their Authorised Dealers for the **Supply and Installation and Commissioning of Wavelength Dispersive X-ray Fluorescence Spectrometer**

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| Last date and time for submission of tender online | 16.01.2018 AT 5.30 P.M |
| Date and time of opening of tender | 19.01.2018 AT 11.00 AM |
| For technical details contact | The Associate Professor and Head, Department of Geology, University of Kerala, Kariavattom campus, Kariavattom P. O., Trivandrum- 695581, Kerala. Phone: 9895245380, 0471 2308403 Email:geopradeep@gmail.com |

For further details logon to www.etenders.kerala.gov.in

TECHNICAL SPECIFICATIONS

| SI No | Parameter | Requirement |
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| 1 | Purpose | Fully automated PC controlled WDS XRF for quantitative, qualitative and semi-quantitative (standardless) elemental analysis from Be to U in solid phases . |
| 2 | Principle | WDS Floor mounted single cabinet XRF. The spectrometer should be microprocessor controlled and fully compatible with the latest computer configurations. <i>The vendor shall quote the most advanced model of the spectrometer available to them and which is currently internationally available.</i> |
| 3 | Measurement range and materials | From ppm to percentage in rocks, soils and all other geological materials in pellet as well as fusion bead form. The system shall be capable of analyzing major, minor and trace elements including halogens in geological samples (25 mm to 50 mm dia.) |
| 4 | Sample Changer | An automatic sample changer with capacity of handling at least 50 samples or more of various dimensions at a time. If the system handles sample by separate sample cups or holder complete hardware with steel and gold masks in multiples of ten should be quoted. |
| 5 | X-ray generator | Minimum 4 kW or more. 60 kV & 140 mA or better. Diagnostic software should allow access to all important parameters of the generator. HT and current should be programmable with safety built in the control software. |
| 6 | X-ray tube | Rhodium target. The rating of the X-ray tube should be at least 4 kW. Insulation should be ceramic-based insulation with ≤ 50 micron Be window. The X-ray spectrometer must have a protective covering/feature to deal with accidental sample spillage and corrosive samples. Sample to anode distance should be minimum for maximum intensity. The vendor should ensure special provision in the tube for drift free performance of minimum 10000 hours. It should have facility for auto tube reading/conditioning, monitoring tube life, generator flashes, water flow, temperature, pressure inside goniometer and other status. |
| 7 | X-ray path | Measurement medium shall be vacuum for solids, fused beads and pressed pellets. |

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| 8 | Minimum Current increment | In steps of 1 mA |
| 9 | Cooling | Water chiller: closed circuit cooling unit for water circulation in XRF equipment. Single or three phase to be quoted. The chiller should be capable of controlling water flow as per KV and mA requirement. |
| 10 | Vacuum chamber | Should have air lock facility with minimum number of vacuum joints. |
| 11 | Dust collection system | To collect dust/loose powder from the sample surface before it enters main chamber should be inbuilt in the spectrometer (not primary beam filter) |
| 12 | Collimeters | Coarse and fine collimators for Be to U |
| 13 | Primary beam filters | 4 or more position primary tube filter |
| 14 | Crystals | Standard crystal set of minimum 4 crystals (for analyzing elemental range from beryllium to uranium). Instrument should have provisions to add more crystals. All suitable crystals for efficient and fast analysis of the range of elements specified including halogens in rocks & soil samples (F, Cl, Br, I) to be quoted. |
| 15 | Sample spinning | Facility needed |
| 16 | Vacuum pump | The spectrometer should be evacuated with single rotary vacuum pump operation. Vacuum pump should be built inside the spectrometer cabinet |
| 17 | Goniometer | θ - 2θ stepper independent motion. Scanning speed about 2400 degrees/min 2θ |
| 18 | Detectors | Flow proportional and scintillation, both with minimum count rate of 3.5 Mcps. |
| 19 | Safety norms | Electrical, electronic & Xray safety features should be in built & as per the international norms and should be clearly specified in the offer. |

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| 20 | Software and minimum features | <p>Qualitative, quantitative and standardless analysis capabilities. Original licensed latest software. Should have following basic minimum features</p> <ul style="list-style-type: none"> • Multipoint background correction • Line overlap correction • Ratio calculation • Auto PHD/PHA measurements • Calibration curve (Net intensity / concentration, corrected intensity/ concentration) for qualitative and quantitative analysis • Empirical matrix correction models • Theoretical matrix correction models • Compton & Rayleigh scattering correction model • Calculation of concentration functions • Data storage • Network connection to LAN (TCP-IP) for transmission of data. <p>Automatic results conversion to excel sheet</p> |
| 21 | Sample cups and holders | <p>Sample cups: 40 mm. Sample holders 20 Nos. for pressed pellets samples, 10 Nos. for fused glass bead. Vendor should quote expandable auto sample changer which can accommodate at least 40 samples or more having compatible tray size and it should work with a mechanism of x-y transfer manually or programmable for automatic selection.</p> |
| 22 | Sample size | <p>Maximum sample diameter 40 mm</p> |
| 23 | Power | <p>200/220/440 V, 50 Hz</p> |
| 24 | UPS | <p>An appropriate UPS with minimum 30 min back up to support the XRF and an appropriate UPS for the chiller, and associated batteries. All these should be from reputed firms who have experience with supporting XRF installations. The UPS and the batteries too should be covered under the warranty that applies to the XRF. The XRF system will be installed in the SICC of the University of Kerala, and the the Sophisticated ICC has its own back up diesel generator which kicks in within 5 minutes of power failure.</p> |
| 25 | Spare parts | <p>Should be available for trouble free run for the next 10 years from the date of installation/supply</p> |

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| 26 | Instrument Software | <p>Standard less, multi element analysis. The offered standard less software should be intelligent and should have following features: -</p> <p>The automatic analysis of totally unknown samples for all elements from Be to Uranium without performing a calibration with best analytical flexibility for use.</p> <ul style="list-style-type: none"> - Standard samples required for calibration of the standard less software must be supplied along with the machine. Vendor must provide detailed certificate of analysis with concentration of elements present in standard samples. - Additionally monitor samples required for standard less analysis to be provided. <p>The software should have the following features (or better).</p> <ul style="list-style-type: none"> - It should be capable of automatically performing peak fitting, element and peak identification and accurate determination of net intensities with background and line overlay corrections. - It should allow tagging of elemental concentration values of known samples. - It should be useful for user-specific calibrations, based on the variable alpha model. - It should be able to perform fast scan for a quick qualitative analysis and slow scan for accurate analysis of major's, minors and traces. - Allowing analysis of bulk samples, small samples. - The standard less program should have the possibility of performing as an integrated facility together with Qualitative and Quantitative software supplied along with the system for all the elements (Be to U). <p>Software package and Standards for analysis of Trace elements as per below requirement:</p> <p>For analysis of trace element on a broad range of sample types and compositions with high accuracy equipped with advanced algorithms for accurate background determination and corrections for spectral overlap and matrix effects.</p> <ul style="list-style-type: none"> • fast, accurate trace element analysis down to sub-ppm levels • advanced background corrections for accurate net peak intensities, including: |
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| 27 | Manuals | All manuals to be supplied as hard and soft copies . |
| 28 | Warranty | Onsite warranty period for the equipment and X-ray tube, water chiller etc should be for Three Years comprehensive with free replacement of faulty/defective parts. Extended comprehensive warranty for the next two years should also quoted. |
| 29 | PC | <u>Branded Computer</u> : with latest configuration with highend PC, 17” TFT color monitor and Laser jet printer |
| 30 | Compliance statement | Essential to be supplied with the quote |
| 31 | Installation / commissioning and training | <ul style="list-style-type: none"> * Pre-installation requirements such as power supply, space, water supply, gas supply etc with complete instructions has to be provided as soon as possible after the purchase order issued. * Vendor should ensure the complete installation and commissioning of the equipment at the university’s instrumentation centre (SICC at Kariavattom, Trivandrum). The exhaust venting and ducting shall be done by the vendor. All expenses towards this are to be borne by the supplier. The system will be installed and commissioned at specified site within reasonable time (max 1 month). * Instrument calibration and standard sample analysis carried out at manufacturer sites, with the analysed sample, should be shipped along with the instrument. On installation the same result to be reproduced by the installation/ service team at our site. * Onsite training for about 3 persons should be given during installation for ten working days or to our satisfaction (whichever is later). |
| 32 | Other Requirements | A complete list of buyers of the same model over the past five years in India. Demonstration of all functionality as quoted in the Technical Bid in any of laboratory in India where the equipment has been installed. Vendor should quote separately for necessary spares and consumable for 3 years optionally. |

General Conditions:

- * The Bidder should be a manufacturer or their dealer specifically authorised by the manufacturer to quote on their behalf for this tender as per Manufacturer Authorisation Form and Indian agents of foreign principals, if any. Who must have designed, manufactured, tested and supplied the equipment(s) similar to the type specified in the “Technical Specification”. Such equipments must be of the most recent series/models incorporating the latest improvements in design. The models should be in successful operation for at least one year as on date of Bid Opening.
- * Incomplete & conditional tenders and tenders received after the due date will be summarily rejected without assigning any reasons thereof.
- * Compliance Statement: Along with the technical details provide a tabular column indicating whether the equipment quoted by you meets the specifications by indicating 'YES' or 'NO'. If 'YES', support the claim by providing original brochures. Vendors should provide clear brochures/data sheets about the equipment and it's working. Also include adequate proof for the claim regarding the performance. Also include adequate
- * Reference: Names of Institutes with contact person and telephone/ email where similar equipment supplied by you in India [Preferably South India] shall be mentioned in the bid.
- * The price should be inclusive of all taxes, duties, transportation, insurance, installation etc. Nothing extra will be paid in addition to the quoted rate. Any amount in Indian rupees for installation, commission, labour, spares, service etc shall be entered in item 2 of BoQ.
- * **Every tenderer should submit Tender fee of Rs. 2500/-**
- * **Every tenderer should submit Earnest Money Deposit (EMD) of Rs. 25,000/-**
- * The price should be inclusive of all taxes, duties, transportation, installation etc. Nothing extra will be paid in addition to the quoted rate.
- * Payment Terms: 90% payment shall be made through irrevocable L/C on presentation of complete and clear shipping documents and balance 10% of the amount shall be released after the receipt, installation, commissioning and acceptance of the equipment.
- * Validity of tender: Tender submitted shall remain valid at least for 120 days from the date of opening the tender. Validity beyond 120 days, from the date of opening of the tender shall be by mutual consent.

- * Delivery and installation: Price quoted should be CIP Department of Geology, University of Kerala, Kariavattom campus, Trivandrum-695581. Proposed delivery schedule should be mentioned clearly. **Delivery and installation should be made at Sophisticated Instrumentation and Computation Centre, University of Kerala, Kariavattom campus, Trivandrum- 695581, without any extra cost.**
- * Service facility: Supplier should mention their details of service setup and manpower in Trivandrum who are responsible for after sales support.
- * The model number, make, and a printed literature of the product shall submit positively.
- * In case of any dispute, the decision of the University authority shall be final and binding on the bidders.
- * The undersigned reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Documents to be Uploaded

- * Signed Compliance Matrix
- * Detailed Technical Brochure
- * Under taking of support for next 10 Years
- * BoQ

**The Registrar,
University of Kerala,
Senate House campus, Palayam
Trivandrum- 695 034, Kerala.**